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# DIET IN GENERAL PRACTICE*

## WITH SPECIAL REFERENCE TO THE AMOUNT OF FOOD GIVEN

BY

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The results of treatment by diet are often very different from those aimed at. Sometimes this is because the main idea has been obscured in a mass of comparatively unimportant detail, but more often it is because alteration in one direction has led to deficiency in another. Such errors cannot be avoided unless the constituents of a normal diet are constantly kept in mind, and for this reason these will first be briefly given.

### The Normal Diet and its Constituents

For a diet to be normal it must contain enough food. Perhaps it is because this is so obvious that it is so often forgotten. The actual amount required by different people varies much more than books on physiology lead one to suppose. The diet for an "average man" approved by a committee of the Royal Society consists of 100 grammes of protein, 100 grammes of fat, and 500 grammes of carbohydrate. This has a total energy value of 3,400 calories. Many people can maintain health on a much smaller allowance of food or of protein than this, and the tolerance and requirement of fat also vary greatly. The amount of carbohydrate varies very widely, too, but it should always be enough to ensure normal metabolism of fat, and for this the ratio of carbohydrate to fat should not fall below that indicated by Woodyatt's formula, $F = 2C + \frac{1}{2}P$. Finally, in considering quantity it must be remembered that excess may be as harmful as lack.

The importance of vitamins seemed at one time to be overstressed. Recent work, however, by Harris (1935, 1936), Archer and Graham (1936), and others has shown that minor degrees of vitamin deficiency are all too common, and that they often occur in patients on special diets in which the normal vitamin requirement has been overlooked. Diets given in gastric cases are extremely liable to be deficient in vitamin C, and low-residue diets in vitamin B, unless this particular danger is realized and the deficiency corrected. In all diets, therefore, the possibility of such deficiency must be considered.

Every diet must contain certain inorganic constituents, and of these iron, iodine, calcium, and sodium are the ones of which a deficiency may occur. When it does it may result from failure of absorption or excessive loss rather than from actual deficiency in the diet. Witts and others have shown how rapidly many forms of anaemia respond to large doses of iron, but that such response only occurs when the amounts given are far and above those taken normally. Lastly, every normal diet should contain sufficient roughage, hard food to develop the jaws and keep the teeth healthy, and water.

### Deficiency through Dieting

Restriction of diet in one direction may lead to deficiency in another, and the most common of these untoward effects is the result of reducing the food to an amount below the optimum necessary for health. In some cases the reduction is so severe that actual weakness from lack of food occurs. This may happen with diets given for various conditions. In the artificial feeding of infants with diluted milk it is very easy to bring the caloric value too low without realizing it, unless calculations are made to check this. The following is an example of such a mistake.

A premature infant weighing six pounds failed to put on weight. She had been given six feeds in the day, each feed amounting to three ounces, consisting of one part milk and two parts water and half a drachm of sugar; half a drachm of cod-liver oil emulsion was also given daily.

For rough-and-ready reckoning it should be remembered that the child of 6 months or under requires approximately 50 calories per pound, and that one ounce of cow's milk or human milk produces 20 calories, one drachm of sugar 15 calories, and one drachm of fat 30 calories. In this case the calorie requirements were 300. The child was actually getting six ounces of milk, 120 calories; three drachms of sugar, 45 calories; and half a drachm of fat, 15 calories; total, 180 calories, or about 120 short of the theoretical requirement. The replacement of water by another ounce of milk per feed, bringing the total calories up to 300, rapidly produced a normal gain in weight. Minor deficiencies through too great dilution of milk are not uncommon, but they can easily be avoided if such a method of calculation is used. When breast-fed children fail to thrive the cause is often too little milk. In such cases the importance of test feeding to find out exactly how much food is being given cannot be over-emphasized.

Diets for gastric and duodenal ulcer cases afford another example of quantity deficiency, particularly those given in the early stages, consisting mainly of milk. In order to maintain strength and weight and promote healing it may be well to give 2,000 or more calories a day. One pint of milk produces approximately 400 calories, so that five pints will be necessary if the diet consists entirely of milk. This diet is difficult and trying for the patient, and so far as the ulcer is concerned there is no reason why more concentrated fluid feeds, variously flavoured and thickened,

* A lecture delivered to the Isle of Ely Division of the British Medical Association at March on October 22, 1937.

should not be given. Cream and olive oil, for example, are high-calorie foods of great value. The difference between a diet of, say, 1,000 calories and one of 2,000 may be that between healing and failure to heal; while the lower diet, if continued for long, may make convalescence slower than it need be. Discretion must be used, particularly at the very beginning of treatment, but fuller diets are nearly always well tolerated.

In patients with chronic nephritis and high blood pressure it is not unusual to find that all red meat has been forbidden. If the diet previously has been a very full one and has contained much red meat it is clearly rational to reduce this in order to throw less strain on the kidneys, liver, and heart, but in so doing it must be remembered that to cut off the main source of protein drastically is often to cause a feeling of weakness and depression that is worse and more disabling than the actual symptoms of the disease. Moderate restriction is sound, but the benefit resulting from drastic restriction is at the best nebulous, and is not justified if it produces symptoms. Many patients who have been thus severely treated feel fitter and better in every way when their burdens are lightened. If a patient has been accustomed to take meat three times a day he will probably feel better if he is allowed it once a day rather than not at all.

### Diet in Diabetes

In the treatment of glycosuria, whether diabetic or not, excessive dieting is one of many pitfalls. It is very important to make a correct diagnosis before symptoms are masked by what may be excessive, even unnecessary, restriction. Many cases of glycosuria are innocuous and do not need treatment, but are dieted unnecessarily: the symptom has been blindly treated without an investigation of its cause. The following is an extreme example of this mistake.

A man of 40 was sent to the out-patient department suffering from mild hyperthyroidism and chronic pulmonary tuberculosis. Sugar had been found in his urine, and because of this finding his loss of weight had been attributed to diabetes mellitus, and a diet of 100 grammes of carbohydrate, 75 grammes of protein, and 150 grammes of fat given. The glycosuria was actually a symptom of hyperthyroidism, and with his raised metabolism, chronic infection, and restricted diet he was going rapidly downhill. A change to a high-calorie diet with plenty of carbohydrate led to rapid improvement and ultimately complete recovery.

Except in severe cases of diabetes mellitus it is important that investigations of blood sugar and urine should be made before the diet has been altered, so that the correct diagnosis may not be masked by treatment. Once the diagnosis of diabetes mellitus has been made the test of good treatment is whether the patient feels absolutely fit, is able to do full work, and maintains a constant weight. If a normal blood sugar and freedom from glycosuria can also be maintained so much the better: but fitness and efficiency are more important than these, and some of the latter standards may have to be sacrificed. Extreme introspection or neurasthenia is too heavy a price to pay for a normal urine, and in such cases some laxity is preferable. It is desirable, however, that freedom from ketosis should always be maintained.

In diabetics, as in normal people, there is extreme variation in the amount and type of food required, and the best diet for a particular patient must ultimately be found by trial. In patients over 45 the question whether insulin is necessary often arises. In such borderline cases the diet which they can take and still be sugar-free is barely enough to keep them fit and active. Again decision is by trial and error, but it is a pity to allow patients to struggle on without insulin, under-nourished but sugar-free, when with insulin they could take a fuller diet and feel well. When they develop an infection many such patients will have glycosuria and need insulin; they should therefore be taught how to use it, so that they may take it at once without fuss should occasion suddenly arise. In old people with diabetes it is undesirable to reduce the blood sugar suddenly either by diet or by insulin. Many feel better with a permanently raised blood sugar, and the danger of over-dieting even when glycosuria is present must not be forgotten.

### Diet in Other Conditions causing Obesity

In contrast to the diets in which inadvertently too little food is given I would direct attention to those in which the aim is reduction of weight. "Reducing" diets have a wide application, not only for the treatment of obesity as such but in the treatment of other conditions in which a moderate increase in weight often escapes notice. It is of those "other conditions" that I want particularly to speak.

From a theoretical standpoint increase in weight seems likely to lessen physical capabilities in certain directions. The mere addition of a stone means that more work has to be done, throwing extra strain on the circulatory and respiratory systems for which there is no return. To those of sedentary occupation or inclination this may tip the scales on the side of increasing weight and decreasing activity, a vicious circle which, once started, may be difficult to break. The deposit of superfluous fat, particularly around the hip and shoulder girdles and in the abdomen, leads often to degeneration of posture, which predisposes to bad breathing and visceroptosis. Bad breathing, a lax abdominal wall, and diminished activity interfere with the return of blood to the heart. This is normally brought about by muscular movement of the limbs, the descent of the diaphragm during inspiration—which, when the abdominal wall is of good tone, raises the intra-abdominal pressure and drives blood towards the heart—and the negative pressure in the great veins towards the end of inspiration. This effect is shown by the tendency of such patients to develop varicose veins and haemorrhoids. And yet how often does one see varicose veins treated but no attempt made to correct the obesity posture or visceroptosis. Further, the output of the heart is dependent on the venous return, so that the whole circulation is likely to suffer. Increased deposit of fat and diminished activity also has its effects on joints, muscles, fasciae, and tendons, allowing adhesions to form which interfere with the blood supply, so paving the way for chronic rheumatic affections, such as "lumbago," "neuritis," and "sciatica."

### Relative Cardiac Insufficiency in Obesity

Proger and Dennig (1932) have made an experimental study of the factors responsible for the so-called relative cardiac insufficiency in obesity. They compared three obese with three normal patients, with the following results.

The vital capacity in the obese was from 12 to 25 per cent. below normal, according to whether height or surface area standards were used. The respiratory minute volume, while the same in both groups at rest, showed an average increase of one-third in the obese during mild exercise. The respiratory rate per minute in the normal and obese during mild exercise was 17 and 18 respectively. The oxygen

consumption was definitely greater in the obese during exercise, and was more than could be accounted for by the greater work associated with the extra weight or higher respiratory rates. The resting pulse rate tended to be higher in the obese.

If obesity produces these effects in patients whose hearts are healthy its effect on those with a weak or damaged myocardium becomes clearer. The opinions of many distinguished physicians might be quoted in support of the view that obesity tends to shorten life. Rolleston (1932) says: "The long-lived are usually spare and seldom fat, having been this since middle age." It is also supported by life insurance figures. MacLaren (1929) says that cerebral apoplexy, Bright's disease, nephritis, cardiac disease of uncertain nature, and diabetes mellitus all give a much higher mortality in those over weight. It is supported as well by the biologist. Robertson and Ray (1920) have shown, in white mice, that those with relative paucity of tissue accretion in late life tend to be long-lived. From the evidence there is little doubt that in many the tendency to put on weight is a degenerative change. This is a particularly important point, because in numerous cases it can be prevented.

### The Causes of Obesity

Before considering treatment of obesity, however, it is essential to discuss its causes. Du Bois (1927) has divided cases into two main groups: endogenous or constitutional, in which there is frank endocrine abnormality; and exogenous, in which no such cause can be recognized. These groups merge into each other, and while the extremes can be recognized there are a large number of cases in which it is impossible to say how far the exogenous or the endogenous factors predominate. The tendency to put on weight is one of the most variable characteristics in different people; one can eat as much and do as little as he likes and his weight does not vary; another has but to eat an extra potato or omit his daily walk and his weight rises. Such tendencies often run in families, and may be likened to other hereditary metabolic disorders such as diabetes or gout. Whatever may be the primary cause, it is certain that in most people gain or loss depends on supply and demand, the amount of food absorbed and the amount of energy used. The effect of variation of food and exercise differs so much in different people that it is impossible to predict with certainty the result of a particular regime in a particular patient, and the effect must be determined by trial and error. In nearly all cases, however, a decrease in the fat-forming elements of the food—carbohydrate and fat—with increased exercise will cause a loss of weight, but the degrees of each required must be found by experiment.

A word must be said here on the use of thyroid gland in obesity. This is valuable when there is hypothyroidism and in some patients who put on weight at the menopause. When, however, there is no thyroid deficiency thyroid extract should only be used as an adjunct to treatment by diet, massage, and graduated exercises, and in most cases it is unnecessary. If these measures fail, then a careful trial of thyroid is advisable. Treatment of obesity with thyroid alone is usually unsuccessful unless the dose is pushed, and then it may be dangerous. Poulton (1931) suggests that many obese subjects, far from possessing a low metabolism, have it slightly raised. To give thyroid in such conditions without reducing weight may mean that still more work is thrown on a heart which has already too much to do. The patient remains fat and feels very ill.

### Method of Reducing Weight

Reduction of weight may be said to depend on the application of these principles. Fat formation is prevented by having less fat and carbohydrate in the diet, and metabolism is stimulated by giving protein and increased exercise. Only if these methods fail should artificial stimulation of metabolism by thyroid be resorted to. In actual practice this means that the diet is made up mainly of lean meat, fruit, and green vegetables, with only enough sugar, starch, and fat to prevent feelings of weakness or hunger. In putting patients on such a diet it is wise to begin slowly so that adjustment to the change may be gradual: the degree of change depends on the individual, but once a diet is found that produces a steady fall in weight there is no need to make it more drastic. The scales are the best guide.

The following example shows the method in practice:

A woman, aged 50, with obesity; weight 14 st. 6 lb. There was no evidence of endocrine abnormality. On July 3, 1937, she was put on a diet of lean meat and fruit and green vegetables, with 140 grammes of carbohydrate per day. By July 31 there had been no change in weight, and the carbohydrate was reduced to 80 grammes. On August 14 her weight was 14 st. 5 lb., so the carbohydrate was further reduced to 60 grammes. On October 16 her weight had fallen to 13 st. 4 lb.

Increase in exercise should also be gradual. Graduated exercises, designed where necessary to improve breathing and posture, should if possible be taught and supervised by a qualified masseuse, supervision being relaxed as the patient becomes proficient. It is essential that such exercises should be done regularly at home every day. Other exercises, such as walking for prescribed distances, cycling, or riding, are valuable, and the degree to which these are necessary must be found by trial in each case. The scales and the patient's feelings are again the best guides. In patients with excessive abdominal fat a surgical belt is often a great aid to increased activity.

In ten consecutive patients with uncomplicated obesity treated as out-patients at Addenbrooke's Hospital during the last year for periods ranging from twelve to forty-eight weeks the average loss of weight was 25 lb. each. Reducing diets and graduated exercises were used in all cases, and in only two were small doses of thyroid given in addition.

Occasionally patients do not respond, and these often come from families in which there is a strong familial tendency to obesity. Before beginning treatment careful inquiry into the family history will be of importance as a guide to prognosis.

### Effects of Treatment by Weight Reduction

Treatment by weight reduction is often of the greatest value when obesity occurs either as an incidental association or as the result of some other condition, and perhaps unnoticed by the patient at all. Sometimes the actual increase in weight above the normal is comparatively slight and would pass unobserved in a healthy patient. In association with a weak myocardium or a raised blood pressure, however, it becomes profoundly significant, because it may be the one factor which is treatable, and may turn the scales in favour of recovery. Some conditions in which the possibilities of weight reduction should always be considered are: chronic bronchitis, myocardial weakness and degeneration, high blood pressure, visceroptosis, and fascial rheumatism. In such the methods used are the same as those in simple obesity. Their application is, however, a much more delicate problem. Changes

of diet and exercise must be made more slowly and must be carefully adjusted to the individual case. Before beginning treatment it is best to make a patient describe in detail his diet and daily life. This provides a basis which may be gradually modified on the lines mentioned. In cases of heart disease and high blood pressure it may be best in the early stages to use massage as a prelude to increased activity.

### Illustrative Cases

The following are examples showing some types of case to which the above methods are applicable:

*Case 1.*—A general practitioner, aged 47. The patient gave a history of chronic bronchitis with increasing winter cough for five years; breathlessness on exertion, getting worse for six weeks; and pain over the praecordium on exertion, with fluttering sensations in the chest. Examination in April, 1936, showed the presence of chronic bronchitis and some emphysema. Clinically his heart was found to be enlarged and one inch to the left; there were a tick-tack rhythm and frequent extrasystoles: the resting pulse rate was 90. There was slight cyanosis; the blood pressure was 140/90, and the electrocardiogram normal. His weight was 13 st. 12 lb.; height 5 ft. 7 in. The diagnosis was chronic bronchitis and myocardial weakness. Treatment consisted in gradually reducing the diet and increasing exercise, reducing smoking, and ordering the wearing of an abdominal belt. On May 20 the patient was much better and his weight was reduced to 13 st. 5 lb. On July 7 there were no symptoms; his weight was then 12 st. 2 lb., and he was doing much of his practice on a bicycle. The improvement has since been maintained.

*Case 2.*—A man aged 62 complained on July 31, 1937, of increasing breathlessness on exertion and slight giddiness of several months' duration. Examination revealed arteriosclerosis, a blood pressure of 190/110, and a pulse rate of 46. An electrocardiogram showed a 3:1 heart-block. His weight was 14 st. 3 lb. After ten days' treatment with massage, mild graduated exercises, and a reducing diet his weight had fallen to 13 st. 4 lb. The symptoms of breathlessness and giddiness had disappeared, and he felt much better.

*Case 3.*—A woman, aged 52, had had increasing noises in the head and breathlessness on exertion for eight months, with a recent gain in weight. Examination revealed arteriosclerosis and a high blood pressure (200/110). Her weight on July 17, 1937, was 12 st. 8 lb. Treatment consisted in reducing the diet and the prescription of half a grain of thyroid extract each day. After three months her weight had fallen to 10 st. 8 lb., the blood pressure was 200/94, the symptoms had disappeared, and she felt well.

*Case 4.*—This patient, a woman aged 44, complained of pain in the back on exercise and a "bearing-down feeling" in the stomach. On examination her doctor found sugar in the urine. When seen on June 1, 1937, she was very obese, her weight being 16 st. 9 lb. There was a heavy deposit of fat round the shoulders and hips, and the abdomen was protuberant. The urine gave 2 per cent. of sugar, but no acetone. The resting blood sugar was 2 per cent. Treatment took the form of massage and exercises to reduce weight and improve posture and breathing, with a reducing diet, and an abdominal belt was worn. After three months' treatment the symptoms had gone, the urine was sugar-free, the resting blood sugar 0.12 per cent., and the patient's weight 14 st. 6 lb.

*Case 5.*—A woman, aged 51, stated that following an attack of influenza in February, 1937, she developed shortness of breath and precordial pain on exertion. These symptoms persisted. When examined on May 19, 1937, her heart was not enlarged, but the quality of the sounds was poor; the blood pressure was 150/80. The abdominal wall was lax, with visceroptosis. Her weight was 10 st. 10 lb. and she was rather fat. Treatment was by means of an abdominal belt, massage, and exercises to reduce weight, and a moderate reducing diet. After five months' treatment her weight was 10 st. 1 lb. She was better in every way and her symptoms had almost gone.

### Conclusion

By treatment on the above lines it is often possible to delay the effects of degenerative processes that occur after middle life. To be successful, however, such treatment must be begun early and must be thorough. If it is left too late comparatively little can be done. Both the recognition and the treatment are in the hands of the family doctor, whose opportunities are unrivalled.


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## COAL-TAR NAPHTHA FOR THE DESTRUCTION OF BED-BUGS*

### APPLICATION IN DWELLING-HOUSES AND TENEMENTS


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Attention was first directed to the use of heavy naphtha for the destruction of bed-bugs in a note by us in the *British Medical Journal* (1937, **1**, 459) and the *Lancet* (1937, **1**, 530). Toxicity experiments with heavy naphtha carried out by Professor G. R. Cameron at the University College Hospital Medical School indicated that danger to man from this substance was not to be apprehended. Extended research employing a wide range of heavy naphthas confirmed the results of the original experiments.

To ensure that only suitable naphthas shall be used the following specification has been drawn up:

*Specification for Heavy Coal-tar Naphtha*

1. *Colour.*—Shall not be darker than a freshly prepared solution of 1 ml. of N/10 iodine in 1,000 ml. of distilled water.

2. *Specific Gravity.*—Not less than 0.835 and not greater than 0.910.

3. *Water.*—Shall be free from water and other visible impurities at 15.5° C.

4. *Distillation Range.*—Method as defined in B.S.I. Specification No. 479 for coal-tar naphthas. Up to 160° C. not more than 5 ml.; up to 190° C. not less than 90 ml.

5. *Flash-point (Abel).*—Not less than 105° F.

6. *Tar Acids and Tar Bases.*—Not more than 0.25 per cent. of tar acids and 0.25 per cent. of tar bases.

Heavy naphtha complying with this specification may be obtained from all the principal tar distillers throughout the country at prices ranging from 1s. 6d. to 2s. 6d. per gallon, depending partly on the quantity purchased.

* A report to the Bed-bug Infestation Committee of the Medical Research Council.

### Experimental Work

In our original experiments heavy naphtha was found to be lethal to the bed-bug through physical contact. In addition the liquid gives off a vapour which at certain concentrations is also lethal to the bed-bug. It is upon the combined action of these two factors, more especially the latter, that the efficacy of heavy naphtha depends.

The first method of using heavy naphtha consisted in spraying walls, ceilings, and floors, particular attention being given to likely harbourages—for example, behind picture rails, skirting-boards, etc. Masks with a suitable filter are worn by the operators. It was found that certain types of paintwork were damaged by naphtha and that painted linoleum was destroyed, but this has largely been overcome by the use of diffusion screens and covering linoleum with blankets where necessary. Rooms were kept sealed for twenty-four hours, and at the end of this period samples of air were taken for the determination of the naphtha vapour concentration. This was found to be 0.1 per cent. by volume, and showed that the air was only one-third saturated with vapour. Doors and windows were now opened, and ventilation was found to be rapid—so much so that rooms could be entered after a few minutes without any discomfort. After eight hours' airing in this way a further sample of air showed a concentration of vapour of only 0.009 per cent. On closing doors and windows for a further fifteen hours an air sample showed a vapour concentration of 0.009 per cent., thus indicating that concentration does not "build up" by gradual release of absorbed vapour from walls, woodwork, etc.

### Effect of Temperature on Vapour Concentration

These experiments were continued throughout the autumn of 1936, but with the first cold weather a number of failures occurred. This experience led to an investigation of the effect of temperature on vapour concentration and a determination of the minimum concentration lethal to the bug. The following table shows the concentration of vapour in air at four different temperatures. The figures will, however, vary slightly with different samples of naphtha.

TABLE I

| Temperature (° F.) | Concentration (vol./vol.) |
|---|---|
| 50 | 0.16% |
| 61 | 0.21% |
| 70 | 0.29% |
| 75 | 0.36% |

The minimum concentration lethal to the bed-bug was determined in a series of laboratory experiments in which bugs were exposed for twenty-four hours to various concentrations of vapour. Table II is typical of the results obtained with three different samples of naphtha.

TABLE II

| Concentration (vol./vol.) | Sample 1 | Sample 2 | Sample 3 |
|---|---|---|---|
| Per cent. 0.05 | All alive, some rather sick | As for 1 | As for 1 |
| 0.10 | A few survived but died within 48 hours | ,, | ,, |
| 0.15 | All dead | All dead | All dead |
| 0.20 | ,, | ,, | ,, |
| 0.25 | ,, | ,, | ,, |
| 0.30 | ,, | ,, | ,, |

Controls were all alive. The above concentrations apply equally to eggs.

These results, taken in conjunction with those shown in Table I, indicate that for effective disinfestation the temperature should not fall below 50° F., though it is not desirable to use heavy naphtha below 60° F. In winter time it will therefore usually be necessary to heat a house to as high a temperature as is practicable, say 80° F. If an exposed flame is used the heater must be removed before fumigation is started, and smoking or the use of naked lights prohibited while heavy naphtha is being handled. The temperature will inevitably fall, but the rate at which it does so will depend on the outside temperature. It is desirable to heat as long as possible, in order that not only the air but also the walls, etc., shall be warmed.

### Loss by Diffusion and Absorption

Unfortunately the concentration figures obtained in the laboratory may not be reproduced in practice. For instance, on fumigating a house in summer at a steady air temperature of 67° F. analysis at the end of twenty-four hours showed a vapour concentration of 0.10 per cent. (or approximately only a third of saturation). There are various physical causes for this—for instance, loss of vapour by diffusion through the fabric of the structure and by absorption in building materials. To counteract these losses blankets were suspended around the walls and sometimes horizontally across the rooms. After the rooms had been sprayed in the usual way these blankets were also sprayed, and analysis of the air after twenty-four hours showed that the vapour concentration was about one-half of saturation. Blankets wetted in this manner formed a reservoir of naphtha ready to vaporize when the concentration dropped below saturation point. While these results were in the right direction they were not entirely satisfactory, and it was found that woollen or shoddy material was not ideal for the purpose. There are exceptions to this. For instance, for maintaining a concentration in a roof space sufficient to kill any bugs which may be there or to prevent them from escaping from lower rooms that have been treated, woollen blankets are laid upon the joists and the whole area is sprayed with naphtha. The slower diffusion from woollen materials is advantageous in a draughty place such as a roof space. Various materials were tried, and finally Egyptian cotton fabrics were chosen. The fabrics had the following characteristics:

| | Fabric I | Fabric II |
|---|---|---|
| Weight per sq. yd. (oz.) | 2 | 1½ |
| Threads per inch : warp | 102 | 86 |
| weft | 90 | 78 |

### The Use of Diffusion Screens

Naphtha dropped on to the fabric spreads in much the same way as ink spreads on blotting-paper, and when screens are wetted with naphtha and hung near the walls a high concentration of vapour is rapidly produced where it is most needed. Unless treated with a reinforcing dose, which will be described later, the screens are usually dry at the end of a twenty-four-hour fumigation, in marked contrast to the woollen blanket, which always holds a considerable residue of naphtha unvaporized.

The method of suspending these diffusion screens next received attention. Small pin hooks were first tried, but although satisfactory in one way a considerable amount of time was required to fix them. We are indebted to Dr. Macmillan and members of his staff in the health department of the borough of Woolwich for suggesting the use of electric conduit tubing, of half-inch and five-eighths-inch diameter in standardized lengths. This framework is very quickly erected in a room of any size, and by means of distance pieces is kept three inches away from the adjacent walls. The fabric of the diffusion screen is

usually purchased in strips thirty-six inches wide ; these are cut into sixteen-foot lengths and thrown double over the top rail of the scaffolding.

From results of analysis of air samples taken from rooms kept under naphtha vapour it was clear that by using the correct type of diffusion screen a considerably increased concentration of vapour was present at the end of twenty-four hours' fumigation. The degree of saturation at the end of twenty-four hours was increased from 33 per cent. to 80 per cent. by the use of cotton diffusion screens, but it was realized that in the unfavourable conditions presented by a leaky house such a high percentage of saturation might not be maintained at the end of twenty-four hours. The need was felt for a reinforcing dose of naphtha to be put in the room about half-way through the twenty-four-hour period without unsealing. The delayed-action sprinkler has been designed for this purpose. This apparatus automatically delivers a charge of naphtha at a prearranged time varying from eight to eleven hours after the room has been sealed. This is effected by means of an alarm-clock mechanism which at a predetermined time allows naphtha to be thrown on to the diffusion screens from a centrifugal sprayer driven by a clockwork motor.

The concentrations obtained when using the technique as outlined are shown in the table giving the results of an experiment in July, 1937. Three similar rooms were treated with equal quantities of washed heavy naphtha (on the basis of one gallon per 750 cubic feet room space). The procedure was as follows:

*Room I:* Walls, woodwork, etc., sprayed, but no screens in room (old technique). *Room II:* Walls draped with light cotton diffusion screens, room sprayed, and screens thoroughly wetted. *Room III:* As for Room II; but in addition the delayed-action sprinkler, charged with half a gallon of naphtha, was set to deliver a reinforcing charge eleven hours after the room was sealed. A temperature of 67° F. was maintained throughout.

*Table showing Concentration of Naphtha Vapour in the Air of the Rooms at the End of Twenty-four Hours*

| | Concentration (vol./vol.) | Approx. Degree of Saturation |
|---|---|---|
| Room I .. .. .. | 0.14 per cent. ..... | 50 per cent. |
| Room II .. .. .. | 0.22 „ „ ..... | 80 „ „ |
| Room III .. .. .. | 0.25 „ „ ..... | 90 „ „ |

Minimum lethal concentration (for twenty-four hours' exposure) = 0.15 per cent.
Saturation concentration at 67° F. = 0.27 per cent.

The figures explain themselves, but the following observations are relevant.

(*a*) The house in which these experiments were carried out was of good construction, and diffusion losses were therefore at a minimum. In an old leaky house the difference in concentration between Room II and Room III would in all probability be much more marked.

(*b*) The reinforcer enables a second dose of the lighter (or lower-boiling) constituents to be released in the room, and we have reason to believe that these constituents are slightly more toxic to the bed-bug.

## Technique for Use of Heavy Naphtha

The technique for using heavy naphtha may thus be summarized as follows:

1. Make a careful examination of the room to be disinfested, for dead spaces. These are frequently boarded in, and in such cases one or more small holes should be drilled to allow easy access of the vapour.

2. Lay wool or shoddy blankets in the roof space on top of the joists and spray these thoroughly with naphtha.

3. Drape walls with light cotton diffusion screens, using the tubular scaffolding as support.

4. Spray walls, woodwork, etc., more especially where there is obvious infestation, and thoroughly wet diffusion screens with naphtha. (Naphtha will remove certain types of paint, and where paintwork is likely to be affected this should not be sprayed.)

5. Set delayed-action sprinkler to deliver a reinforcing charge from nine to eleven hours after the room has been sealed.

6. At the end of twenty-four hours ventilate and remove screens and scaffolding. The screens rapidly dry in the open air, or more quickly in a warm room, and are then available for the next job.

## Disinfestation of Furnished Houses

The general practice with regard to furnished and occupied houses varies considerably. In some instances the furniture is removed in a van and treated with cyanide, and the house itself with heavy naphtha, sulphur, or other insecticide. Alternatively the furniture is disinfested in the house by means of some contact insecticide. We have felt for a considerable time that if furniture could be treated effectively *in situ* a great deal of labour and expense would be saved. As with HCN, if heavy naphtha is used alternative accommodation for tenants for one night must be provided. The original experiments in this connexion consisted in the grouping of all the furniture in the middle of the room and covering it over with dust-sheets. The room was then sprayed in the ordinary way. This method has, we understand, been successful in a number of instances, but we are not satisfied that this is the best procedure. The results have not always been satisfactory.

Experiments in two furnished houses have been carried out in Woolwich, and although a few bugs were found afterwards in one room in each house, we consider that the technique, modified as indicated below, will be likely to give satisfactory results. The walls of a furnished room were draped with diffusion screens in the usual way and the furniture grouped together in suitable positions. The delayed-action sprinkler was set down in the middle of a "kiosk" of tubing (as used for erecting the scaffolding around the walls) 3 ft. 6 in. square and 8 ft. high. The four sides of the kiosk were hung with diffusion screens and the floor immediately beneath covered by a blanket. The sprinkler was timed to discharge the naphtha on to the screens ten hours after the rooms had been sealed. The walls and screens were sprayed in the usual way, and the delayed-action sprinkler set to deliver a reinforcing dose as described above.

In these two experiments only one delayed-action sprinkler was available, and in both cases this machine was not used in the rooms where bugs were found subsequently. Having regard to the quantity of absorbent material in a furnished room we consider that a reinforcing dose of naphtha is essential, and it is not unreasonable to assume that if a delayed-action apparatus had been available for each room the results might have been entirely satisfactory. As furnishings and the like absorb the vapour to a large extent we are of the opinion that the initial dose should be increased to, say, 1 gallon to 500 cubic feet of air space. (*The method adopted for using heavy naphtha is of the utmost importance, and the training of personnel in its use is also a prime consideration. Adequate supervision should always be given where houses are being treated with heavy naphtha if satisfactory results are to be obtained.*)

In our experience the workmen have taken kindly to the use of heavy naphtha and complaints have been few. One man found that the constant use of naphtha had a drying effect upon his skin, but this was soon overcome by the use of lanolin. He has had no further trouble.

### Disinfestation of Furniture and Clothing: Van Fumigation

This essential part of the procedure in the eradication of bed-bugs has received considerable attention. Our experiments in this direction are not so advanced as with dwelling-houses, but results obtained when using heavy naphtha indicate that this process can be applied to van fumigation in much the same way as HCN.

We are indebted to Dr. Geffen, M.O.H. Enfield, for his help and the interest he has taken in this aspect of the work.

A small pantechnicon, metal-lined, was fitted with tubular electric heaters placed beneath a duckboard flooring with the terminals outside. Thermostats ensured that a temperature of 100 F. could be maintained. A tent of blankets was made to fit the inside of the van and was sprayed with heavy naphtha, using a foot-operated pump. The doors were sealed with ordinary sealing-paper and the tubular heaters connected up to the electric power point. A temperature of 100 F. is reached in about three-quarters of an hour and a naphtha concentration of approximately 0.5 per cent. is obtained. This concentration is only a quarter of that of the minimum explosive concentration, so that danger from this source is not to be apprehended. Laboratory experiments have shown that an exposure of four hours at this temperature is sufficient to kill the bug, but to provide a good margin of safety a period of seven hours from the time of switching on the current was decided upon.

To simulate the conditions of bug-infested furniture ten calico bags, each containing ten bugs, were secreted in the folds of upholstered chairs, in a mattress rolled up several times, and in various articles of clothing. This load of furniture and clothing was treated with naphtha vapour for seven hours. At the end of this period the contents of each bag were examined; all the bugs were dead. These experiments were repeated on various occasions, using considerably greater numbers of bugs, and with one exception have been uniformly successful. When bugs were placed in an artificially made air pocket in the middle of a folded feather bed they were not killed.

These experiments open up possibilities of a safe and rapid method of disinfesting furniture in transit. The polish on furniture is not affected by this process, and we are carrying out further investigations as to how soon furniture is sufficiently free from gas to be suitable for return to the tenant. According to indications the period is not a long one, and we do not anticipate any difficulty from the slow desorption of naphtha, not even when bedding is treated by this process.

### The Rate of Desorption

An experiment was carried out to test the rate of desorption of naphtha vapour from furniture and bedding disinfested in the van. A typical load of furniture and bedding was kept in naphtha vapour for six hours at 100° F. The van doors were then opened for a few minutes, but no means existed of sweeping the air out of the van. The van was driven to a neighbouring house and the furniture at once unloaded into an upstairs bedroom, the doors and windows of which were kept closed (the fireplace was not sealed). After one hour the room was entered and a sample of air was taken, and a sample was also taken the following morning, at the end of eighteen hours. The air temperature in the afternoon was 61° F., that of the next morning 55° F. The results of the experiment were as follows:

| Concentration of Naphtha Vapour (vol./vol.) | Remarks |
|---|---|
| After 1 hour: 0.09% .. | .. Atmosphere unpleasant; irritant action on eyes |
| After 18 hours: 0.04% .. | .. Smell of naphtha, but no unpleasant symptoms of any kind |

The conditions of this experiment were intentionally not those that would be adopted in routine work. The results clearly show that naphtha vapour is rapidly desorbed from furniture. No "building up" occurred, and had doors and windows been left open, as would be the procedure in ordinary circumstances, the naphtha concentration would soon have been reduced to negligible proportions. It will be advisable to have vans fitted with an extractor fan or shutter which can be opened to allow a current of air to sweep through while the van is being driven along the road. The beating of bedding might also be desirable.

In addition to this experiment two mattresses and pillows were placed in the van at the same time and treated in the same way as the furniture mentioned above. They were then removed to a room and were lain on for an hour. In the first half-hour the windows were closed; the door was also closed, but the fireplace was not sealed. In the second half-hour the windows were open. At first there was slight discomfort to the eyes and nose from the gas being released from the pillows and mattresses, but this quickly passed off. The opening of the windows, however, did not noticeably alter the smell of the mattresses and pillows. It is thought that with some ventilation before the mattresses and pillows are returned to the house there would be no discomfort in sleeping on them the same night. The conditions under which this experiment was carried out were purposely made as adverse as possible.

Heavy naphtha has been used in some twelve hundred houses and tenements, mainly empty, in various parts of the country, and experience has been gained in both summer and winter conditions of fumigation. Houses so treated have been subjected to rigid inspection throughout the year, and in one area the treatment has been successful in ninety-nine houses out of every hundred.

### Summary

1. *Method of Applying Heavy Naphtha.*—A method of applying naphtha using light cotton diffusion screens and an automatic delayed-action sprinkler for reinforcing has been developed. Using the new technique the gas concentration at the end of twenty-four hours is 60 per cent. higher than that obtainable by the old method of spraying walls, ceiling, woodwork, etc. With the new method the loss of gas concentration by diffusion is largely overcome, and the gas concentration is at all times above the lethal minimum, when the temperature is 50° F. and over. Failures due to loss of vapour should therefore be eliminated, and it is to be hoped that local authorities using naphtha will adopt the improved process in its entirety. The light tubular scaffolding is quick and easy to erect and affords good support for the diffusion screens. It has the advantage over other methods of suspension that no damage is caused to the structure of the building.

2. *Disinfestation of Furnished Houses.*—This is admittedly a difficult problem, but with the new methods and apparatus further work in this connexion is in hand. The delayed-action sprinkler was not perfected until the past few months, and only one machine has been avail-

able. Preliminary results are encouraging, and such a process has manifestly so many advantages that work to this end will be continued.

3. *Disinfestation of Furniture and Clothing.*—A van process of disinfestation, using heavy naphtha, has been developed which promises well. So far it has not had an extended trial, but the preliminary results are satisfactory. Further work is in hand.

4. *Reaction of Workmen using Naphtha in Disinfestation Work.*—Complaints by workmen have been almost negligible. One man developed a slight skin irritation on the hand, but this has been cured by the use of lanolin, and, generally speaking, the men have taken kindly to the use of naphtha as a fumigant.

The earliest experiments with heavy naphtha and much of the subsequent work described in this paper were made possible through the interest and co-operation of Dr. J. Macmillan, medical officer of health for the borough of Woolwich. We wish to express our indebtedness to him for the use of houses, equipment, and the services of members of his staff.

All the work on heavy naphtha has been carried out for the Medical Research Council under the auspices of its Bed-bug Infestation Committee.

# THE RECOVERY PERIOD IN ANTERIOR POLIOMYELITIS

BY

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No big epidemics of anterior poliomyelitis have been recorded in England, yet on an average 640 cases occur annually, and the more severe of them present an important medical and economic problem.

It is well known that many patients improve greatly after the acute illness has subsided. However, observers disagree on the length of the period of recovery when adequate treatment is given. Some state that it is as short as nine months, others as long as four years. There is therefore some uncertainty regarding the proper duration of hospital treatment; and when spinal, abdominal, and lower limb muscles are involved it is even more difficult to decide when patients should be allowed to walk. In order to avoid the possibility of insufficient treatment it is best to err on the side of safety, and keep them in bed while there is any possible hope of improvement. This means that some patients are treated in hospital for a longer time than is afterwards found to be necessary. Economic considerations are involved, for the cost of keeping a patient in hospital is at least two pounds a week, and another person is for the time being deprived of the bed. More accurate information on the length of the recovery period is needed before this essential margin of safety can be reduced.

Although a huge American literature on poliomyelitis has accumulated during the last twenty-five years, most of it is devoted to descriptions of various forms of treatment and comparatively little to analysis of the results. In the Royal National Orthopaedic Hospital, since 1932, the progress of patients with infantile paralysis has been carefully recorded on muscle charts, which have provided the data for this study. The value of these charts in the prognosis and treatment of poliomyelitis has not been sufficiently appreciated in England, and it is to be hoped that they will be more generally used.

In the present investigation I have determined the progress of paretic and paralysed muscles in thirty-six patients all receiving the commonly accepted treatment from the time of the acute infection. The data so obtained are important in arriving at a prognosis regarding the degree of muscle recovery, and when the lower limbs are involved this affords a guide in deciding when to begin ambulatory treatment.

## Treatment

During the acute phase of the disease a patient is given absolute rest in either a plaster shell or a complete plaster case. In this way the damaged anterior horn cells are shielded from stimuli on the sensory side and from the patient's desire to move the part. This period of rest during the stage of acute inflammation is in accordance with general pathological principles, and in practice is approved by competent observers who have dealt with many cases. When muscle tenderness has gone one infers that the acute inflammation in the cord is subsiding. Muscle re-education is then started in conjunction with radiant heat and massage, while joints are moved, passively if necessary, to prevent stiffness. Particular care must be taken to avoid fatigue of the recovering muscles, and when exercises are not being carried out, overstretching of the weak muscles is prevented by resting them in plaster shells or splints. Light tasks are imposed on muscles too weak to function against gravity. In many instances the exercises are carried out in warm-water baths, gravity being eliminated thereby, while the heat improves the circulation. In a few instances electrical stimulation is an additional therapeutic measure, valuable when there is one weak muscle in a group the other members of which have the same function but are not paralysed. For example, the biceps femoris, semimembranosus, and semitendinosus are flexors of the knee. When these muscles are involved it may be found that the semimembranosus and semitendinosus are strong enough to flex the leg against gravity, while the biceps shows scarcely a flicker of contraction. Under these circumstances active flexion is performed by the stronger muscles, and the biceps is not used; electrical stimulation of the latter is therefore indicated. But, wherever possible, reliance is placed on voluntary exercise, which is the only true form of muscle re-education.

## The Muscle Charts

The progress of cases under treatment was recorded on muscle charts introduced into the hospital by Mr. H. J. Seddon, the resident surgeon. At first charting was done every two months, but is now carried out at intervals of six weeks. The chart here shown is used for the lower extremity. The skeletal muscles are classified into forty groups, and the voluntary power of each is tabulated as N; R+; R−; G−; F; or O. R+ signifies that the muscle will overcome gravity and additional resistance, but is less powerful than normal. R− indicates that it will overcome gravity but not additional resistance. G− is recorded if the muscle will carry out its action only when gravity is eliminated; while F means that there is a flicker of contraction insufficient to move the part. Since the only movement of use to the patient is that which he initiates voluntarily, the recording of voluntary power is a more direct measure of recovery than that obtained by electrical stimulation. Such a chart has the merit of showing improvement or retrogression accurately enough for clinical purposes, without the use of special apparatus such as that devised by Lovett. With a little practice the necessary observations can be made fairly quickly.

Although one may not be responsible for the management of many cases of poliomyelitis it is desirable that the results of each examination should be charted, for unless quantitative measurements are made ideas of progress are

ROYAL NATIONAL ORTHOPAEDIC HOSPITAL

Name..... Number..... Trunk and..... lower extremity

| | | | | | | |
|---|---|---|---|---|---|---|
| Date | | | | | | |
| *Type of Contraction | | | | | | |
| Erector Spinae | | | | | | |
| Abdominals | | | | | | |
| Gluteus Maximus | | | | | | |
| Abductors of Hip | | | | | | |
| Tensor Fasciae Latae | | | | | | |
| Adductors of Hip | | | | | | |
| Quadriceps | | | | | | |
| Sartorius | | | | | | |
| Psoas | | | | | | |
| Inner Hamstrings | | | | | | |
| Outer Hamstrings | | | | | | |
| Calf Muscle | | | | | | |
| Tibialis Posterior | | | | | | |
| Tibialis Anterior | | | | | | |
| Peronei | | | | | | |
| Extensor Longus Hallucis | | | | | | |
| Extensor Longus Digitorum | | | | | | |
| Flexor Longus Hallucis | | | | | | |
| Flexor Longus Digitorum | | | | | | |
| Small Muscles of Foot | | | | | | |

Gait — Trendelenburg

Contractures, Deformities, Measurements .....

Operations .....

*V—Voluntary F—Faradic G—Galvanic

Strength of Contraction
N Normal contraction
R+ Contraction against gravity and resistance
R− Contraction against gravity only
G− Contraction but not against gravity
F Flicker
O No contraction

Muscle chart of the lower extremity for recording progress of cases under treatment

apt to be affected by one's optimism or pessimism at the time, and the patient is easily deluded by trick movements so readily acquired and accounted as recovery. No one can remember for long the state of all the important muscles, and even when the patient is always seen by the same observer such notes as "extensors of the foot stronger" convey little more than a general impression, and are much less informative than a muscle chart. The keeping of a chart also eliminates the personal factor from the records, and is therefore invaluable if another clinician is called upon to treat the case.

### The Patients

The patients studied were admitted to the Royal National Orthopaedic Hospital, Stanmore, Middlesex, between the years 1932 and 1936. Their ages ranged from 4 to 14 years, so that they were old enough to co-operate in both charting and treatment. The lesions were probably more severe than those of the average type seen in the London area during those years. Some cases admitted from orthopaedic clinics were of average severity, but others were transferred from general and fever hospitals because of extensive paralysis calling for prolonged treatment.

When admitted to hospital the distribution of muscular paresis or paralysis in fifty* cases was as follows:

| | Per cent. |
|---|---|
| Both lower limbs; abdominal and spinal muscles | 34 |
| Upper limbs; lower limbs; abdominal and spinal muscles | 18 |
| Lower limbs only | 18 |
| One lower limb | 8 |
| Upper limbs | 6 |
| One upper limb | 6 |
| Both lower limbs and one upper limb | 6 |
| One lower limb and one upper limb | 4 |

It will be seen that in more than half the cases the lower limbs and the abdominal and spinal muscles were all affected.

### The Muscle Re-education Period

There are few terms more generally misunderstood than "recovery period" in anterior poliomyelitis. Lovett defined it as the period during which spontaneous recovery of muscle function occurs. In most standard English textbooks the term is used without being defined, but the authors do not hesitate to state that its duration is from two to four years. As the discussion which follows usually concerns treatment it is not always clear whether reference is being made to a period of spontaneous recovery—that is, natural recovery without medical care—or the period of improvement under the treatment described. Since most cases are now diagnosed and treated early, the spontaneous "recovery period" is of little importance compared with the period of improvement under muscle re-education. Rather than alter the original definition of recovery period and thereby create confusion I would suggest that the term "muscle re-education period" be used to indicate the time during which the muscles will improve under treatment, assuming that it is started without delay. Although there is no real justification for the idea, many students and practitioners infer that since the "recovery period" is two years it would be useless to suggest muscle re-education for a patient who suffered from the acute disease two or more years ago and who has never been given adequate treatment. In such a case it is always worth while to give at least a few months' treatment, as the following case shows.

A girl of 10 suffered from infantile paralysis when she was 4 years of age. She had never been treated. On examination of the thenar muscles of one hand it was found that there was scarcely a flicker of contraction in the short abductor and opponens pollicis. In order to relax these muscles the thumb was splinted in opposition, and after four months' treatment they had so developed that she was able to abduct and oppose her thumb strongly against resistance. After the initial lesion many damaged anterior horn cells no doubt recovered, but the muscles they supplied were so overstretched that paralysis persisted. When they were placed at a mechanical advantage, and controlled voluntary movement was encouraged, recovery occurred in response to the functional demand. Other equally striking examples could be cited from a group of fourteen late cases. Because of this, operations for joint stabilization should not be considered until a thorough attempt has been made to obtain maximal improvement. If this is not done there is a grave risk that one will excise a joint and find later that the operation was unnecessary, the muscles having become stronger after the arthrodesis which gave them the relaxation necessary for their recovery. This point is well illustrated by the following cases:

* As fourteen of these had been treated for some months before admission they have not been included in the group considered under the heading of "Recovery Period."

In September, 1933, a boy aged 8 years suffered from anterior poliomyelitis. Both upper limbs were affected, and he was kept in bed for ten weeks. When seen by a surgeon in January, 1934, the left upper limb had completely recovered, but the right deltoid remained paralysed. A note made at this time read: "No hope for deltoid, will probably need arthrodesis." A splint was not applied, and the deltoid naturally remained paralysed. Thirteen months after the acute infection the patient attended another clinic, where it was found that in spite of the absence of treatment the muscle would contract against gravity but not additional resistance. An abduction splint was supplied, and after six weeks' treatment the deltoid was seen to be capable of contracting against both gravity and resistance. By November, 1935, the muscle had completely recovered, and re-examination in November, 1936, showed that it was normal.

Some years ago a patient upon whom an arthrodesis of the knee had been performed for quadriceps paralysis came under the care of Mr. Bankart. When examined by him the affected knee was soundly ankylosed, but the quadriceps had recovered.

### Progress in the Muscle Re-education Period

The following table shows the number of times important muscles were involved together with the percentages of good and poor recoveries under adequate treatment. For the sake of clarity and simplicity I have not given a complete list of the recorded muscles.

*Table showing the Result of Treatment in 36 Cases*

| | Number of Times Involved | After Treatment Completed Percentage Capable of Contracting at least Against Gravity | After Treatment Completed. Percentage Capable of Moving Part with Gravity Eliminated | After Treatment Completed Percentage showing no Useful Contraction |
|---|---|---|---|---|
| Lower limb | | Per cent | Per cent. | Per cent. |
| Gluteus maximus .. | 44 | 80 | 9 | 11 |
| Gluteus medius and minimus | 48 | 57 | 26 | 17 |
| Quadriceps femoris | 52 | 54 | 16 | 30 |
| Hamstrings . | 41 | 65 | 5 | 30 |
| Calf muscle . | 44 | 69 | 9 | 22 |
| Dorsiflexors of toes | 46 | 67 | 8 | 25 |
| Anterior and posterior tibials | 51 | 38 | 6 | 56 |
| Peronei .. . | 45 | 67 | 11 | 22 |
| Upper limb | | | | |
| Deltoid .. . | 15 | 79 | 14 | 7 |
| Triceps .. . | 13 | 70 | 15 | 15 |
| Biceps and brachialis | 14 | 100 | — | — |
| Short muscles of thumb | 13 | 78 | — | 22 |

It will be seen that the chief muscle groups of the lower limb were involved with approximately equal frequency, but that some recovered more completely than others. In general the distribution of paralysis and the extent of recovery in individual muscles were not very different from those in certain series of cases recorded in America. The gluteus maximus fared best and the two tibials worst; over 80 per cent. of the former became strong, while over one-half of the latter remained useless. I could not find such a striking contrast in any other series of cases. Generally the gluteus maximus did not do so well and the tibials recovered more completely. Also, it is unusual for the peronei to recover so much more frequently than the tibials. It is possible that in the present series better results might have been obtained in the tibials had the feet been more carefully splinted in inversion during the re-education period and the soles supported by accurately moulded plaster gutters.

### Early Recovery

The most rapid improvement in voluntary power takes place during the first six months after the acute illness. Indeed, in those cases in which the ultimate function was good, surprising recovery was found after the initial six or eight weeks of complete rest. Under muscle re-education during the next four months there was a further marked increase in strength. However, no certain prognosis could be given during this period except in mild cases, and in the most severe where all the muscles of a limb remained completely paralysed after four months. In the ten instances where all muscles of a lower limb were charted as O or F at four months the extremity remained flail.

### Recovery at Six Months

Interesting facts emerged when the condition of three hundred muscles at the end of the six-months period was compared with their ultimate state.

I. Those which contracted against gravity and resistance (R+) at the end of six months became more powerful, and many were eventually regarded as normal.

II. All muscles capable of contracting against gravity only (R−) became strong enough to move against additional resistance (R+).

III. Of the group that were able to move the part only when gravity was eliminated (G−), (*a*) 45 per cent. recovered sufficiently to contract against gravity and resistance (R+)—these were initially the stronger muscles; (*b*) 45 per cent. were ultimately able to contract against gravity only (R−); (*c*) 10 per cent. did not improve.

IV. Of those showing only a flicker of contraction (F) 90 per cent. failed to improve, while 10 per cent. became powerful enough to contract against gravity (R−). Briefly expressed, the majority of muscles which after six months were capable of moving the part developed useful contractions, while most of those that could not do so failed to recover. Therefore, at six months from the onset of the acute infection it is possible to predict the ultimate extent of recovery with reasonable certainty.

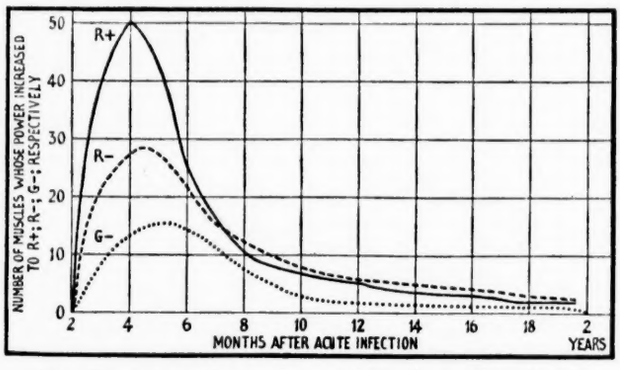
| Reading at Six Months | Ultimate State |
|---|---|
| R+ | N or R+ |
| R− | R+ |
| G− | R+ : 45 per cent.<br>R− : 45 „<br>G− : 10 „ |
| F | R− : 10 „<br>F : 90 „ |

In this series of cases improvement continued until nine to eighteen months from the acute infection, and in odd cases even longer, but in the vast majority no great change was seen after a year of muscle re-education. It may be true that the period of spontaneous recovery is from two to four years, but the period of notable improvement is much shorter when adequate treatment is given from the first.

Some cases progress differently from those considered here. Young children who cannot co-operate fully in the muscle re-education may show a relatively slower improvement over a longer period than those who are older. This is well illustrated in the case of a child aged 2 years at the time of the acute infection. After nine

months' treatment the anterior and posterior tibial muscles showed only a flicker of contraction, yet in three years they were able to invert the foot against gravity. Steady progress occurred during that time as the child gradually learned to co-operate. Acute illness or joint stiffness may also affect both the rate and duration of recovery. This was noticeable in a patient who developed scarlet fever during the re-education period. The toxaemia caused a definite decrease in muscular power, which was regained as the infection subsided. Later the child suffered from acute suppurative otitis media and a similar phenomenon was again observed.

The decision as to when ambulatory treatment may begin depends on the condition of the lower limb muscles and those of the abdomen and spine. The problem is relatively simple if only the former are affected, but when asymmetrical abdominal or spinal paralysis is present there are many difficulties. If the limbs alone are affected the patient should be kept in bed until three successive muscle charts, made at intervals of six weeks, show no further improvement. Patients with slight paralysis usually improve rapidly, and it is safe to allow them up as soon as the muscles will contract strongly against resistance. Six months after the acute infection those who are more severely paralysed may still have very weak muscles. As has already been shown, the ultimate prognosis in these cases can usually be given fairly accurately after one has studied the charts. If there is any prospect of obtaining useful recovery in key muscles extended treatment should be given, but in a small proportion of cases this expectation will not be realized and successive charting will show that progress has ceased. The patient should then be allowed to walk with suitable supports. The majority will be doing so within a year from the beginning of treatment.




The R+ curve shows the number of muscles that improved to R+ during each successive period of two months. The curves R− and G− show the number of muscles increasing in power to R− and G− respectively. It will be seen that a maximal number of muscles increase to R+ at the four-months period, that at six months only half the number did so, while after a year very few increased to R+.

It was previously stated that when abdominal and spinal muscles are involved there is difficulty in determining the optimum time for treatment in recumbency. In the first place there is no simple and very satisfactory way of recording the degree of recovery in the abdominal or the individual spinal muscles. Asymmetrical recovery, with or without the influence of gravity, frequently results in scoliosis, which may be slight when first noticed as the patient lies in bed but rapidly progressive when he walks about. Even if he is kept in bed until recovery of muscle power is maximal there is no guarantee that with asymmetrical paralysis the balance between muscles on each side of the spinal column will be improved. Indeed, in many instances it is further upset, since the less damaged muscles recover more rapidly than the weaker ones. Once deformity is produced the less powerful muscles, being overstretched, become still weaker; thus a vicious circle is established. This helps to explain the development of scoliosis in certain cases two or three years after the acute illness. Usually when there is much paralysis of the spinal and abdominal muscles the lower limbs are also involved, so that if one could assume that the former recovered at the same rate as the latter the patients could be allowed out of bed when the legs showed maximal improvement. Probably such an assumption is not justified, since muscle re-education is more easily applied to the limbs and more rapid improvement would be expected in them. Because of this it is sometimes necessary to keep a patient in bed for two years or more if the trunk paralysis is at all extensive. From a purely theoretical point of view progressive scoliosis could be best controlled by preventing weight-bearing during the period of spinal growth. In most instances this is neither practicable nor desirable. It would mean keeping children in bed until they had reached the age of 16 years. A compromise has to be made, and it can be empirically stated that if patients can possibly walk they should not be kept in bed for more than two and one-half years. Spinal and abdominal supports must be given where necessary and methodical examinations made during the next few years. Sometimes a scoliosis progresses rapidly in spite of supports and remedial exercises, and leads ultimately to the vital capacity being diminished and to circulatory insufficiency. When this is found to be occurring, and the patient is over 8 or 10 years of age, he should be admitted to hospital again, and the deformity corrected as far as possible by head suspension. The Fisher frame used at the Royal National Orthopaedic Hospital is an excellent appliance for this treatment. At a later date one might consider the question of spinal fusion in those cases where external support will not prevent progressive deformity, with its unfortunate sequelae.

## Summary

1. An account is given of the results of a study of thirty-six recent cases of anterior poliomyelitis, progress of which under treatment was recorded on muscle charts.

2. The muscle re-education period is usually found to be much less than the spontaneous recovery period. In the average case it is from nine to twelve months.

3. At from four to six months after the acute infection it is possible to determine the ultimate degree of recovery with fair accuracy.

4. The methods of treatment are briefly given, and the optimum time for treatment in recumbency is discussed.

5. A plea is made for the general adoption of graduated muscle charts as an aid both in treatment and in prognosis.

My thanks are due to the medical board of the Royal National Orthopaedic Hospital for permission to publish this paper, and especially to Mr. H. J. Seddon for his invaluable help and encouragement.

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# TREATMENT OF ACUTE POLIOMYELITIS

## AN ANALYSIS OF SISTER KENNY'S METHODS

BY

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The treatment of infantile paralysis has long been inadequate, and statistics show that of muscles paralysed in the acute stage approximately 60 per cent. of the upper limb muscles and only 30 per cent. of lower limb muscles recover completely; the figure for the trunk muscles is somewhat higher than that for the upper limb. Although the figures vary in different epidemics, approximately 25 per cent. of cases make a complete recovery in three years, leaving a majority with some residual paralysis. These cases are complicated by trophic changes, and deformities which may arise from muscle imbalance. Any form of treatment which will reduce the amount of paralysis in this the "saddest of diseases" will be greatly welcomed. The new system of treatment which I am about to describe has produced results so promising that it appears that we may have to change our views as to the degree of recovery possible. This system has stood the test of over twenty years' experience in the treatment of both acute and long-standing cases, and in no instance has trophic change or deformity developed.

### Orthodox Methods of Treatment

The accepted or orthodox methods of treatment may be summarized as follows:

(*a*) Rest and immobilization of the affected limbs until the stage of pain or irritation is past.

(*b*) Maintenance of affected muscles in a position of relaxation.

(*c*) Avoidance of contractures and deformities by light retentive apparatus.

(*d*) Massage and active and passive movements.

Treatment along these lines is based upon the theory that the pain in the limbs is of central or meningeal origin, and that rest and immobilization will remove the harmful afferent stimuli and enable reparative changes to take place in the cord. The stage of irritation or painful period lasts on an average six weeks, and may be prolonged for three to six months. Immobilization and rest during the whole of this stage is not considered detrimental by many authorities.

### Principles of the Sister Kenny Treatment

In opposition to this accepted theory the view is taken that the pain in the extremities is almost completely vascular in origin. Some of the pain may be of central origin, but this takes the form of spontaneous or root pain and is not aggravated by movement. The muscular pain results from venous engorgement and consequent anoxia of the paralysed muscles. The venous return from the extremities is influenced mainly by muscle tone and activity. In poliomyelitis the interference with this venous return is often of extreme degree. At first there is venous stasis, and later on capillary stasis and capillary paralysis; this is manifested by the coldness and cyanotic appearance of the limb, and is accentuated by immobilization and splinting, especially in the position often adopted of abduction of the upper or lower limb. As a result mild trophic changes develop in the skin, bones, joints, fasciae, and especially in the muscles. Immobilization of paralysed limbs, with consequent vascular catastrophe, leads to contraction of the muscle sheath and anaemia of muscle fibres, with subsequent mild fibrosis—seemingly a clinical entity, comparable to a very mild Volkmann's ischaemic contracture. Brooks has demonstrated the fact that complete obstruction to the venous return from a muscle leads in a few hours to profound muscle changes and is the causative factor in Volkmann's paralysis. A parallel may be drawn between the aetiology of the two conditions. The importance of this ischaemic pseudo-paralysis is recognized when it is understood that it renders muscle re-education extremely difficult. It is accentuated both by stretching and relaxation of muscles, as in the position of relaxation the muscle sheath contracts, tending to cause a permanent shortening of the length of the fibres and often resulting in slight deformities.

The irritation stage is an artificial stage, which may invariably be overcome in two or three days by a well-regulated system of frequent passive movement, fomentation, and hydrotherapy. In no case does pain persist more than three days, although it will usually recur in the early mornings after the limb has been rested during the night. Cutaneous hyperaesthesia also disappears under the treatment. As soon as the temperature drops the active phase of re-education is started—that is, re-education is begun within one week of the onset of paralysis instead of after six or more weeks. In those cases in which a slight rise of temperature persists treatment is carried out in spite of the pyrexia.

Massage has little part in the restoration of circulation, to which all efforts must be directed. By massage the blood is merely squeezed from one set of dilated capillaries to another. Only some method by which capillary tone can be re-established is effective (see Sampson Wright, 1936, *Applied Physiology*). Such a method is a system of hydrotherapy which makes use of the rapid alternation of hot and cold sprays in the bath. The limbs become suffused with a pink colour within ten minutes, the areas last to lose their cyanotic appearance being those which overlie the paralysed muscle groups. By this simple measure applied daily trophic changes are avoided and the later application of such operative procedures as sympathetic ramisection rendered unnecessary.

Briefly, instead of being dealt with by rest and immobilization in the acute stage, the affected limbs must be treated energetically, by foments, by hydrotherapy, and by movement through every range of each joint every two hours, and a finely graded system of re-education must be started as soon as possible, usually within the first week of paralytic manifestations. Under such a regime wasting of paralysed muscles occurs only to a small degree.

### Treatment in the Pyrexial Stage

(1) The usual therapeutic measures, such as lumbar puncture and administration of sedatives and convalescent serum, should be adopted.

(2) The patient lies flat on the back with a very low pillow and a small towel between the shoulders to prevent winging of the scapulae; the limbs are placed in the normal position. The arms are alongside the body supported forward in the mid-horizontal level by small towels, and the forearm is midway between pronation and supination, with the wrists and joints of the hand also in mid-position. The elbow is supported by the towels so that the weight of the humerus does not stretch the muscles of the shoulder girdle. The legs are placed together, no abduction being permitted, and foot-drop and external rotation are prevented by an easily adjustable foot-block.

The knees are held in slight flexion by small pads. If possible, all the bed-clothes are kept off the patient by a large cradle and the air is kept artificially warmed.

(3) Every two hours the painful muscles are fomented, or short-wave diathermy is applied. After that the limbs are passively moved through the full range of each joint three times. At first the limb may be exquisitely painful, but the pain soon disappears and never persists for longer than three days. During the night the limbs are not moved, but are allowed to remain in the position described, and are inspected every two hours by the night staff. If they are out of position they are replaced once again. If pain causes sleeplessness, fomentation and manipulation is carried out during the night. The patient must be under observation night and day. A remarkable feature of this treatment is the quick change in the mental and physical condition. A sick child, apprehensive of painful manipulation, is converted into a contented and co-operative individual within three days.

### Active Treatment in the Apyrexial Stage

As soon as the temperature falls the active phase of the treatment is begun, and may be summarized thus:

(*a*) The individual treatment of the patient and maintenance of a cheerful mental outlook.

(*b*) Special form of hydrotherapy.

(*c*) Maintenance of impulse.

(*d*) Avoidance of fatigue.

(*e*) Avoidance of immobilization.

This active phase is instituted with extreme care, because it must be remembered that most of the residual anterior horn cells are still in a state of cloudy swelling. The patient must be treated alone because it is of major importance that the whole attention should be concentrated on the treatment and not diverted elsewhere. Above all, an atmosphere of confidence must be maintained. The patients are placed upon a canvas sheet and lowered into the bath, and given the form of hydrotherapy previously described. The joints are moved passively every two hours, and on only one occasion each day is an active attempt at movement of the affected muscles made. If a limb shows extensive paralysis only one muscle group is exercised at a time, the other muscle groups being exercised at later intervals in the day. The active attempt at movement involves a special re-educative technique and is carried out as follows:

The limb is grasped firmly just below the insertion of the paralysed muscle or muscle group, and the patient is asked to make the movement. Special grips are used to prevent accessory or trick movements. The patient focuses all his attention on the affected muscle, and the attendant slowly performs the movement passively. Within a few days a trained assistant will detect a faint change in the affected muscle. It can be detected long before the finest movement is noticeable, it represents the first stage in the return of tone (subliminal excitation) in the muscle, and is termed "the impulse."

It takes some training to recognize at first this impulse, which is the basis of the re-education technique. It is the small flame of returning muscle tone which must be delicately nurtured or it will disappear. As the impulse strengthens active attempts must be made twice a day, later three times a day, and finally six times a day. When a movement is achieved for the first time it must be done only once a day, but as it improves the number of times is increased to four a day. The assisted movements are done at first in the bath under water, because the water gives the patient greater mental consciousness of the position of the limbs, but later on the special tables. They are assisted movements at first, but when they strengthen they are resisted, and this practice is maintained until maximal power is achieved.

Once each day in the early stages the patient is taken out of bed and the feet are placed on the ground. A few days later a little weight is allowed on the feet. As muscle power returns more and more weight is allowed on the feet for very short periods each day. This procedure brings about proprioceptive re-education of the lower extremities and re-establishes the blood supply of bones and joints. Full details cannot be given here on the whole re-educative technique, but are available in Elizabeth Kenny's *Infantile Paralysis and Cerebral Diplegia* (1937, Angus and Robertson Ltd., Sydney). Only when a patient still showed paralyses after about two years' treatment would the application of splints or operative intervention be considered.

### Avoidance of Fatigue

It is of extreme importance that fatigue be avoided, and this is the reason for the delicate gradation of the re-educative system. If, for example, a small movement is achieved for the first time, it must not be attempted again for a full twenty-four hours or it may disappear for weeks. Similarly, eliciting the impulse more than once or twice a day during the early stages of treatment may cause it to disappear entirely. The estimation of the faradic and galvanic responses may cause the impulse to disappear for weeks. Thus the attendant must be able to judge exactly by touch the amount of impulse present. Any unskilled attention in the early stages will lead to failure. Extreme care is essential in the nursing of paralysed muscles of the shoulder girdle, especially the deltoid muscle. Intensive training of a competent staff is essential.

### Results of Treatment

It is not, and never has been, claimed that this treatment will cure all cases at all stages of the disease. So far only thirty-five cases have been treated in the early stages, but in view of the degree of improvement in these and in 1,400 chronic cases, it is claimed that Sister Kenny's methods will give the maximum recovery possible in every case treated within the first two months of the disease; this has not always been achieved by orthodox methods. A feature of the method is the speed of improvement, which allows the period of hospitalization to be reduced. Under treatment no case, either acute or chronic, has developed deformity, nor have there been any trophic manifestations, such as chilblains or impairment of the growth of a limb.

### Criticism of Orthodox Methods

In the acute stage emphasis is not placed enough upon maintenance of circulation, only one-half to one hour a day being allotted to this; for the remainder of the time the limb suffers from acute anoxia, and this leads to a spasm in the unaffected muscles, stiffness of joints, and contraction of fasciae. Splinting aggravates this greatly and causes marked impairment of normal proprioceptive sensibility. Splinting may prevent major deformities, but it accentuates muscle spasm and actually predisposes to the development of minor deformity. It also has a bad psychological effect. Many cases after only a month's splinting have shown stiffness of joints and early muscle contractures. Cases immobilized for more than two months are more difficult to re-educate effectively.

Massage is inadequate. It does not prevent the development of chilblains and the more severe trophic disturbances in many cases, as does the special method of hydrotherapy. Electric stimulation causes fatigue and damages the recovering cells. The usual technique of re-education is too coarse. The re-education board does not prevent accessory or trick movements which by long facilitation take up the function of the paralysed muscles, which are forgotten and, if severely affected, do not tend to recover. Many of the affected nerve cells do not redevelop their synaptic relationships, and lie dormant or die. No method of re-education can be successful which does not prohibit all accessory movement, concentrate only on affected muscle groups, and produce mental co-operation between patient and attendant. This can only be done through the sense of touch, which can be refined to the point of recognition of the impulse. Full concentration on the part of the patients can only be elicited by solitary treatment, and by assisting the patient by sensory means to visualize the exact muscles to be treated.

**Summary**

In view of the results obtained by the Sister Kenny method we feel that the prognosis in acute poliomyelitis as regards recovery of function is better than has formerly been thought.

Recovery of muscles is retarded or prevented by ischaemic changes which occur if they are immobilized during the first few weeks of the disease; maximal power can only be achieved by hypertrophy of the residual muscle fibres.

The usual re-educative methods are not sufficiently specialized and do not fully avoid fatigue and trick movements; consequently the muscles do not regain function to the fullest extent possible.

It is suggested that deformity is caused by ischaemia and the consequent muscle spasm and fibrosis, which is, paradoxically, accentuated by splinting, especially when applied in the early stages.

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The following medical promotions in and appointments to the Venerable Order of the Hospital of St. John of Jerusalem were announced in the *London Gazette* of January 4: as Commanders, Major-General E. W. C. Bradfield, C.I.E., O.B.E., I.M.S., Dr. John Ramsay, C.B.E., Major-General Sir Frank P. Connor, D.S.O., I.M.S.; as Associate Commanders, Dr. D. H. Mehta, C.I.E., Lieutenant-Colonel K. K. Chatterji, F.R.C.S.I.; as Officers, Major N. F. C. Burgess, M.D., Dr. S. A. Wilkinson, Lieutenant-Colonel J. Rodger, O.B.E., *M.C.*, I.M.S., Colonel N. M. Wilson, O.B.E., I.M.S., Major-General E. A. Walker, K.C.I.E., C.B., I.M.S., Dr. E. E. Dufty, Mr. H. J. Paterson, C.B.E., M.C., Dr. C. D. Newman, Dr. J. F. Fitzmaurice, Colonel J. A. S. Phillips, C.I.E., I.M.S., Professor W. I. Gerrard, O.B.E., the Hon. R. D. Fitzgerald, *M.C.*, M.D., Dr. J. S. Webster; as Associate Officers, Lieutenant-Colonel A. M. Sharma, I.M.S., Dr. K. B. A. Hamid, Lieutenant-Colonel M. S. Joshi, I.M.S., Dr. S. C. Chatterjee, Colonel N. S. Sodhi, *M.C.*, I.M.S., Captain F. N. Kapadia, M.D., Major Y. V. Krishnamoorthy, M.B., Dr. J. V. Karve, Dr. S. D. de Vos; as Serving Brothers, Dr. R. J. Dyson, Dr. E. W. Rees-Jones, Dr. H. Ramsden, Dr. H. B. Pare, Dr. L. D. Porteous, Dr. H. Hunt, Lieutenant-Colonel G. H. Mahony, I.M.S., Major F. T. Deatker, I.M.S., Dr. J. E. Dovey, Dr. R. C. Oehlers; as Associate Serving Brothers, Captain M. E. Pavri, L.R.C.P., Dr. S. W. Patil, M.B.E., Dr. B. W. Advani, Dr. P. C. Roy, Dr. R. B. V. V. Mulay, Dr. Li Shan Fan, Dr. A. Wai-Tak Woo; as Serving Sisters, Dr. Florence E. Sexton, Dr. Agnes M. Glover, Mrs. Agnes L. J. Dovey, M.B.

# POST-TRAUMATIC PARKINSONISM AND THE EFFECT OF ATROPINE

BY

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Since the review of forty-two cases collected from the literature by Naville and de Morsier few records of this condition have been published. Faure-Beaulieu (1932) gives a detailed account of one case, and finds himself in close agreement with the findings and conclusions of those authors, that such a syndrome indeed exists and that it presents the following features: (i) in the interval between the injury and the appearance of the Parkinsonian syndrome the injured limb remains weak, painful, or paraesthetic; (ii) tremor and rigidity almost always begin in the injured limb; (iii) the syndrome then extends to the other limb on the injured side, so that at a certain stage the aspect is one of hemi-Parkinsonism; (iv) there are no mental changes.

More recently Walker (1937) and Hodgson (1937) have published one case each, and J. H. Hebb, Director-General of Medical Services, Ministry of Pensions, has found fit to query the existence of such a syndrome in view of the medico-legal consequences of its recognition. The details of the following case may therefore be of interest.

ILLUSTRATIVE CASE

A single woman aged 25 was seen in July, 1937, at the Gateshead Psychiatric Clinic of the Royal Victoria Infirmary, Newcastle-upon-Tyne, suffering from weakness and tremor of the left arm, which was suspected by her doctor to be of a hysterical nature. Three years before, while chopping wood, she had struck the tip of her left forefinger with an axe, so that "the end was hanging off." This had healed in about three weeks, and a fortnight later trembling was noticed in the injured finger. Her hand was clumsy—it "dropped things easily"—and in about three months it too began to shake, while a week or two after this the whole forearm and arm became involved. Two weeks later she noticed her left foot "kicking stones on the ground when she walked." The limbs on the left side then "lost their energy," and this and the trembling of the arm got worse, so that for the last two and a half years she could do little physical work of any kind.

Inquiry into her history elucidated former (surgical) trauma to her left arm. In November, 1918, and again in October, 1919, Mr. Grey Turner operated on the head of her left humerus, scraping out a growth which was proved histologically to be a giant-cell sarcoma. On the first occasion he sponged out the cavity with pure carbolic, and on the second washed it out with Harrington's solution and packed it with iodoform gauze soaked in 1 in 18 carbolic. In November, 1919, the wound was reopened, cleaned, treated with bipp, and sutured. An examination in March, 1923, showed no further trouble, and the *x*-ray report then was, "? piece of metal dressing." Detailed inquiry for any illness which might be construed as an attack of encephalitis lethargica revealed nothing: neither she nor her mother could remember her having even a common cold during the last six or seven years. Her mother said there was no mental change.

The patient manifested the following features of left hemi-Parkinsonism: head bent towards the left shoulder; tremor of the lower lip and left angle of the mouth, more pronounced when she smiled in her slow Parkinsonian way; the left elbow held close to the side, with forearm pronated and tremorous; a pill-rolling movement of the left fingers and thumb; rigidity of the left arm and leg. She adopted a steppage gait for the left leg, and her foot was plantar-flexed. The tendon, abdominal, and plantar reflexes were normal, no sensory changes were revealed, and there were no other

positive findings in the nervous system. Extending from the coracoid process four and a half inches down the left arm was an old surgical scar. The left arm was two and three-quarter inches shorter than the right, the shortening being limited to the humerus and radius and the ulna. An old scar, two inches long, was seen on the dorsum of the left forefinger, curving proximally to the radial side and extending through the nail, which was deformed.

The patient was admitted to the Gateshead Mental Hospital as a voluntary patient and there given atropine in high dosage, according to the technique of Hall (1935, 1937) after Kleeman. Complete relief from her symptoms was obtained with 4½ mg. daily, spread over three doses. Observation and routine psychological examination produced nothing relevant.

### Commentary

Cases of Parkinsonism following poisoning by manganese, gold, cyanide, and carbon disulphide have been recorded, but I have been unable to trace one following poisoning by the substances used in this case for the treatment of the growth at the head of the humerus.

Only upon inquiry was a history obtained of weakness and pain in the interval between the injury and the onset of the tremor, and these had not been regarded by the patient as abnormal. Thus the first feature of Naville and de Morsier is poorly exemplified. But the emphatic story of the tremor beginning soon after the injury, appearing at first only in the injured finger and remaining clearly limited to it for some weeks, is surely significant; and indeed no previously recorded case has shown such a precise local relation between the trauma and the first tremor. Because of this and of such a definite history of excellent general health, and in view of the cumulatively impressive accounts of the condition hitherto published, it would seem unwarranted to postulate an untraceable attack of encephalitis lethargica. Coincidence of occult encephalitis and injury does not explain the previously published cases. Naville and de Morsier (1932) state that "the constant succession of these phenomena—injury, pain, hypertony, and tremor of the injured limb; extension to the homolateral limb, then to the contralateral limbs—enables one to declare that it is not possible for it to be in the nature of coincidence."

The effect of high atropine dosage has not been mentioned in the cases published, and it is pleasant to be able to record its satisfactory action in this case, but it will surely mask any spread of symptoms to the opposite limbs. When the patient was last seen (November, 1937) she was persisting with her atropine treatment, had no complaints, and was able to do a hard day's work.

I am grateful to Dr. C. B. Bamford for his interest and for his permission to publish this case, and to Dr. F. J. Nattrass for confirming the diagnosis of Parkinsonism.

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W. B. Hubbard (*Arch. Ophthal.*, Chicago, August, 1937) has experimented with caustic burns in rabbits using 32 per cent. sulphuric acid and 20 per cent. sodium hydroxide. In all cases one eye was irrigated with tap-water, the other being washed out with either 2 per cent. sodium bicarbonate or 2 per cent. acetic acid to neutralize the caustic. In the case of acid burns the best results were obtained with tap-water, while alkaline lesions were best treated with weak acid irrigations. This difference is probably due to the fact that acid proteinates are insoluble and alkaline proteinates are soluble.

# RETENTION OF URINE FOLLOWING EXCISION OF THE RECTUM

BY

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Retention of urine following excision of the rectum is so frequent that it is regarded as a usual post-operative complication. It occurs in both sexes, and generally three or four days elapse before the patient is able to empty the bladder voluntarily. Occasionally the resumption of voluntary micturition is delayed for weeks or even months, and this condition appears to be more especially associated with the removal of high and extensive growths by the perineal route. The danger of retention of urine is the supervention of sepsis, which, though not always fatal, causes considerable morbidity and undermines the patient's strength. Minor operations on the perineum and anal region often give rise to a retention of urine which rarely lasts more than twenty-four hours and which responds to simple treatment. This retention is thought to be due to reflex nervous inhibition. After removal of the rectum, however, the condition persists for three or four days, and occasionally for weeks, and must be due to a more definite interference with the nervous mechanism.

### Sympathetic and Parasympathetic Innervation

The filling of the bladder is dependent upon its sympathetic nerve supply, which keeps the internal sphincter contracted and so allows the accumulation of urine. Abolition of this nerve supply, or its inhibition, allows the sphincter to relax and the urine can escape. The emptying is due to the action of the parasympathetic nerves, which cause the bladder to contract and at the same time relax the internal sphincter. Destruction of this nerve supply reduces the contractile power of the bladder and leaves the internal sphincter tonically contracted by the action of the sympathetic nerves, which are no longer opposed. Thus retention of urine occurs.

Normally voluntary control of micturition exists because both these nerve supplies have cortical connexions. If, however, both are destroyed the bladder does not remain completely paralysed. After a latent period the musculature contracts to the stretch-stimulus of the accumulating urine; at the same time the internal sphincter is relaxed by the intrinsic nerve plexus. This automatic bladder is an excellent example of how smooth muscle adapts itself to carry on its original function after the loss of its extrinsic nerve supply. The presacral nerve, lying behind the peritoneum over the promontory of the sacrum, brings the sympathetic nerve supply of the bladder into the pelvis from the lumbar ganglionated cords. This nerve divides into the two hypogastric nerves, which, passing round each side of the pelvis, bring the supply to the pelvic plexuses, joining them near the groove between the rectum and the base of the bladder. The fibres pass through these plexuses and are distributed to the trigone and internal sphincter.

The parasympathetic supply to the bladder is brought by the nervi erigentes. In seven pelves dissected in the anatomy department of the University of Manchester I found that the nervi erigentes arose mainly from the second and third sacral nerves. In only three cases was there any contribution from the fourth sacral nerve. A pelvic plexus is formed on each side of the rectum by

the nervi erigentes, and fibres could be traced down to the anus and as high as the recto-sigmoid junction. The plexuses were attached to the rectum only by their fibres of distribution, and, passing forwards, they communicated with each other and received the sympathetic fibres near the prostate and bladder base. Dissection of the plexuses, and the tracing of the fibres as completely as possible, showed that those arising from the second sacral nerve appeared mainly to supply the bladder, whereas the rectum was chiefly supplied by the lower fibres of the third sacral nerve and the contribution from the fourth nerve.

### Operative Injury to Nerves

In the dissecting room the rectum may be removed without the risk of damage to the nervi erigentes or to the pelvic plexuses. The hypogastric nerves which carry the sympathetic supply are in no danger of being injured. The removal of a carcinomatous rectum in a living patient demands, however, a much wider dissection. It was found in the cadaver that the dissection necessary would assuredly destroy the contribution to the pelvic plexuses from the fourth sacral nerves and the lower fibres from the third nerves. During the operation the upper fibres from the third sacral nerve were in constant jeopardy, depending mainly on the height and lateral extent of the excision. Damage to the fibres arising from the second sacral nerve could be avoided, but where a high removal was attempted they were in danger of being divided.

The dissections suggested that in perineal excision of the rectum there is little interference with the sympathetic supply of the bladder, but that the nervi erigentes always suffer some damage. The parasympathetic fibres arising from the fourth, and the lower fibres arising from the third, sacral nerves are usually divided, but as they appear mainly to supply the rectum their division does not affect the bladder to any great extent. The supply to the bladder from the upper fibres of the third sacral nerve suffers from traction, and to a varying degree from actual severance of fibres. The supply from the second sacral nerve is injured usually only by traction, but in the removal of high growths it may be severed. The effect of traction will be to paralyse temporarily, and of severance to paralyse permanently, the bladder parasympathetic supply. Hence the action of the sympathetic nerves will be unopposed, giving in the first case a temporary and in the second case a more or less permanent tonic contraction of the internal sphincter. The resulting retention of urine will be temporary in the first instance and more lasting in the second; but it will hardly become permanent, as the smooth muscle will slowly adjust itself to the altered conditions and give an automatic type of bladder.

Previous attempts to deal with this retention of urine have been mainly concerned with the methods of emptying the bladder when the condition is established. The best results appear to have been obtained by Cuthbert Dukes (1928–9), who suggested the pre-operative administration of two doses, at weekly intervals, of a vaccine prepared from the bacteria present in these urinary infections. He inserted a catheter at the time of operation and afterwards emptied the bladder frequently. The catheter was connected to an apparatus which allowed repeated bladder-washing to be performed, and had a column of antiseptic fluid as a seal for the catheter instead of the customary wooden peg. He demonstrated an immediate improvement in results; but even in his own cases one-third of the males and all the females developed some urinary infection. The danger of urinary infection would cease to exist if we could avoid the introduction of a catheter into the bladder.

### Cause of the Retention

It has been shown that the cause of the retention of urine is a relative overaction of the sympathetic nerve supply of the bladder. This appears to be due to weakening of the parasympathetic supply by traction on its fibres during the operation or, in extreme cases, by actual severance of the nerves. The overaction could be avoided by dividing the sympathetic supply either at the time of excision or at a previous operation. This is easily achieved by the division of the presacral nerve, and we know from the numerous cases in which it has been done for gynaecological pain that it is followed by no untoward effects upon the bladder, even though that organ has an intact parasympathetic supply.

This presacral neurectomy involves no separate intervention. Its performance is very easy and it adds no more than a few minutes to the time taken by the exploratory laparotomy and colostomy which must precede the perineal excision. The presacral nerve is found behind the peritoneum overlying the promontory of the sacrum. An incision two inches in length is made through this peritoneum, the pelvic colon being held well over to the left side. The nerve is formed near the bifurcation of the aorta by the junction of three descending roots, and it passes down into the pelvis either as a single cord or, more commonly, as a loose plexus. Rather more than one inch of the nerve is excised, and to make sure that all the fibres are divided it is better to clear the angle between the right common iliac artery and the left common iliac vein completely of all fatty and fibrous tissue down to but not below the sacral promontory.

### Results

A consecutive series of twenty-two cases of perineal excision of the rectum have had their presacral nerves excised at the preliminary laparotomy. Fifteen were males and seven were females, and there was no mortality in the series. In no case was a catheter inserted into the bladder as a guide to the urethra, as it was felt that this was unnecessary and only introduced a risk of sepsis. Of the seven women four passed urine naturally and three had to be catheterized, one for two days and the other two for three days. Of the fifteen men nine passed urine of their own accord; four were catheterized for one or two days, and the other two for five days. In each of these cases the prostate gland was larger than normal. All the patients passing urine normally escaped urinary infection.

These results, although not completely solving the problem of post-operative retention of urine after perineal excision of the rectum, suggest that a preliminary division of the sympathetic nerve supply of the bladder is of considerable value in avoiding this troublesome complication.

### Summary

Retention of urine following perineal excision of the rectum appears to be caused by a nervous imbalance—a sympathetic preponderance due to trauma to the parasympathetic supply (the nervi erigentes).

Resection of the presacral nerve at the time of the preliminary laparotomy and colostomy has been followed by a considerable diminution in the incidence of post-operative retention of urine.

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# Clinical Memoranda

## Abortion Associated with Broad Ligament Cysts and B. welchii Infection

Few abortions can have a stranger background than that about to be described.

CASE RECORD

Mrs. M., aged 27, the mother of three children, the youngest being 7 years old, had her last monthly period on September 8, 1937. During October she had hyperemesis, and at the beginning of that month had a shivering attack following a fall. She was admitted to hospital on October 26 on account of bleeding from the vagina, which started the night before. She looked flushed, her lips were dry and cracked, and the tongue was coated. The respirations were rapid (44 per minute), but there were no physical signs in the chest. The throat was clear and without a rash; her pulse rate was 108 and there was no cardiac bruit; the temperature was 101° F. She had complained of abdominal pain the previous night.

On examination the abdomen appeared to be slightly distended, and tenderness was felt on pressure in the left iliac fossa. There was no dulness in the flanks. Vaginal examination revealed a uterus about the size of a two-months pregnancy, fixed and tender; the cervix was not dilated and there was a foul-smelling discharge. The urine was acid, concentrated but clear, and contained a trace of albumin.

The case was diagnosed as general peritonitis following abortion and immediate laparotomy decided on. Under 0.5 per cent. novocain and gas-and-oxygen anaesthesia (by Dr. Knight) the abdomen was opened in the midline below the umbilicus; no pus was seen. A smear was taken from the visceral peritoneum immediately on opening the abdomen and sent to the pathological laboratory for investigation. On looking into the pelvis a greyish-black sausage-like mass was found on the left antero-lateral side of the uterus. On releasing the tumour it lost its congested look and was seen to be a parovarian cyst filled with clear fluid. There was another cyst, situated posteriorly, which had the left Fallopian tube running above it, and yet another cyst was present beneath, actually pushed down on to the pelvic floor. They were all removed. The superior cyst was the size of a small hen's egg, the middle one the size of a duck's egg, and the inferior one the size of a pigeon's egg. The right ovary was normal; the left ovary was absent.

My impression at the end of the operation was that I had made a mistake in diagnosis, but that laparotomy had been justified by the unsuspected findings. The report from the pathological laboratory came through in due course, and was as follows: "The cysts are simple parovarian cysts. Peritoneal smear: films show Gram-positive bacilli and pairs and short chains of Gram-positive cocci. Culture yields a growth of *B. welchii* and *Staph. albus*." This report was dated November 1: it was therefore five days before the patient was known to be suffering from an infection by the gas-gangrene bacillus.

On the morning following operation the patient aborted, and the placenta had to be removed manually: she was very shocked until this was done. Proseptasine therapy was started —1 gramme three times a day by mouth—and glycerin was introduced into the vagina: she had precordial pain the first post-operative day, but there were no physical signs in the chest. Pitressin was administered in four-hourly doses until flatus was passed two days after the operation; the bowels were moved by enema on the fourth post-operative day. On the fifth post-operative day she complained of pain in the left buttock, and on examination there was a swelling which seemed to be deep-seated in the buttock and to bear an infero-lateral relation to the left sacro-iliac joint. The swelling was fomented and two days afterwards explored, foul-smelling greenish-yellow pus being aspirated. The abscess was thereupon incised and found to be deep to the gluteus maximus muscle, the cavity in its upper part being bounded anteriorly by the posterior ligaments of the left sacro-iliac joint. A drain was inserted. On the same day the report on the peritoneal smear came to hand, and the patient was given 20 c.cm. anti-gas-gangrene serum.

The report on pus aspirated from the gluteal abscess is as follows: "Films show Gram-positive cocci in pairs, chains, and clusters. Cultures yield a growth of *B. welchii* and *Staph. albus*." Her condition improved after draining this abscess, and she had another 20 c.cm. *B. welchii* serum a week after the first dose. Five units of insulin were given twice a day to act as a tonic.

A week after the gluteal abscess had been drained the patient complained of abdominal pain. Rectal examination revealed a pelvic abscess; this was drained through the anterior wall of the rectum and produced only a tablespoonful of pus. She became afebrile four days later; there was troublesome diarrhoea for a few days. Convalescence was rapid, and she was discharged from hospital thirty-three days after admission. On the day of discharge pelvic examination revealed a uterus firmly fixed in the pelvis and drawn over to the left side. Since she had been afebrile for two weeks the fixity of the uterus was recognized as the result of the pelvic abscess.

SUMMARY

1. Incarcerated broad ligament cysts complicating pregnancy.

2. *B. welchii* infection of the peritoneal cavity present at operation.

3. Possible presence of gluteal abscess before admission to hospital, and the condition primarily a *B. welchii* septicaemia determined by the fall early in October.

Longtown, Cumberland. R. RUTHERFORD, F.R.C.S.

## Pregnancy Associated with an Ovarian Dermoid

The following case history presents some points of unusual interest.

On June 22, 1937, Miss X., aged 16, consulted me. Her last normal period was on March 6. Early in April there was a slight vaginal discharge of blood. On examination the breast signs were inconclusive. Palpation of the abdomen was negative. Bimanual examination, with one finger in the vagina, disclosed the presence of a tense pelvic swelling to the right of the uterus. A tentative diagnosis of unruptured extra-uterine pregnancy was ventured upon.

The patient was sent to Auckland Public Hospital, where a diagnosis of retroverted gravid uterus was made. The displacement was corrected and a ring inserted. No other pathological condition was noted. A few days after her discharge from hospital she again consulted me. On inspection a swelling could be detected in the right lower abdomen. Bimanual examination revealed the presence of a three-months gravid uterus and a freely movable, firm-grounded swelling above the pelvic brim on the right side. The clinical findings suggested an ovarian cyst. An infra-umbilical abdominal incision revealed an ovarian cyst about the size of a cricket ball. On removal the cyst proved to be a dermoid, containing sebaceous material, hair, and cartilage. Following operation the pregnancy continued undisturbed.

Points of interest are: (*a*) The association of pregnancy with an ovarian dermoid at the age of 16. (*b*) When the patient was first examined the cyst was intrapelvic. (*c*) At the time of the second examination (after the retroversion had been corrected in hospital) the intrapelvic lateral swelling had disappeared, having been displaced into the abdominal cavity.

Auckland, N.Z. J. P. HASTINGS, M.D., M.R.C.P.

# Reviews

## SURGERY OF THE CHEST

*Thoracic Surgery*. By Ferdinand Sauerbruch and Laurence O'Shaugnessy, F.R.C.S. A revised and abridged edition of Sauerbruch's *Die Chirurgie der Brustorgane*. (Pp. 394; 15 plates, 215 figures. 50s. net.) London: E. Arnold and Co. 1937.

It has become commonplace to point to the enormous progress made in thoracic surgery. Indeed, the developments are so rapid that it is hardly possible to write a textbook on the subject that is up to date in all respects at the time of publication. But such books generally suffer from yet another defect. The artificial distinction between physicians and surgeons is nowhere to be deplored more than in connexion with surgery of the chest. In this field success often depends more on a correct appreciation of the "medical condition" of the patient, and of the time to operate, than on the actual operative technique. Since it is often difficult for surgeons, under conditions existing in this country at all events, to obtain the necessary "medical" experience, close co-operation with the physician is essential, and it is the physician who should accept the responsibility and insist upon due weight being given to his opinion.

Hence the book just produced by Sauerbruch and O'Shaugnessy is assured of an enthusiastic welcome. It is described as "a revised and abridged edition of Sauerbruch's *Die Chirurgie der Brustorgane*," but to most English-speaking readers it will open a wide field of experimental and clinical work that has stood the test of time. Professor Sauerbruch's pioneer work in chest surgery has always been carried out in a team by whom the associated medical problems were constantly being explored; and Mr. O'Shaugnessy's experimental work of more recent date has similarly found important clinical application in the operation of cardio-omentopexy.

The most valuable feature of the book is the logical presentation of the possibilities of active intervention in chest disease—a presentation that will appeal and be intelligible to the physician as well as the surgeon. The style is brief and to the point, yet the whole makes an interesting and connected account. The possibilities of surgery in the chest are well shown by the fact that almost half the book is concerned with surgery of the heart, pericardium, mediastinum, oesophagus, and diaphragm. Each condition described in the book is illustrated by case histories, often going back for several years (for instance, a thoracoplasty and a lobectomy each dating from before the war), thus meeting the frequent objection that such procedures are so new that the end-results cannot yet be correctly assessed. The need is stressed for placing exploratory thoracotomy—a safe procedure—on the same footing as exploratory laparotomy, if we are to discover more conditions in the chest at a stage when they are amenable to surgical treatment. It is good to find bronchiectasis discussed as a condition found in adults, with the addition of a section on its presence in children; for the common tendency to regard it as a disease of childhood has been responsible for its neglected recognition in adults. There are several unique features in the book—for instance, a tomogram of a lung abscess, a skiagram of a peptic ulcer of the oesophagus, a skiagram and a picture of a specimen of mediastinal emphysema, skiagrams and diagrams of mediastinal hernia, and the Gräf diagrams of the mechanical effect of a pleural effusion—all features to be found only in very specialized literature.

The general excellence of the book tends to emphasize several points for criticism. Only forty pages out of a total of 360 are allotted to the section on pulmonary tuberculosis. This may be useful in stressing the point that surgery of the chest is no longer synonymous with surgery of phthisis, but it does not take into account the fact that, owing to the high incidence of pulmonary tuberculosis, the surgical treatment of this disease remains the largest part of the thoracic surgeon's work. The discussion is too brief to assist the physician, and shows a conservative attitude that will rightly discourage reckless surgical interference by the inexperienced, but may at the same time cause many patients to be deprived of the benefits of surgical treatment by the experienced. In a comprehensive treatise of this kind it is disappointing, to say the least, to find also a very scanty account of endoscopy. Bronchoscopy, in particular, is an indispensable and (should be) a very frequent procedure in the diagnosis and treatment of chest disease, and it should have been very fully discussed. Minor points to which attention may be drawn are the absence of mention of pulmonary tuberculosis in the differential diagnosis of pulmonary abscess, and the inadequate insistence on early operation. The omission of dates after names of references should be corrected in another edition, since this book is written in a pronounced historical vein.

No praise is too high for the production of the volume. The format, the quality of the paper, the general lay-out, and the beautiful illustrations all add to the reader's enjoyment. Not the authors alone but also the publishers must be congratulated on this work, which should do much to popularize important practical advances in medical knowledge.

## RADIOLOGY AND THE LAW

*The Roentgenologist in Court*. By S. W. Donaldson, A.B., M.D. (Pp. 230. 18s.) Springfield, Illinois; Baltimore, Maryland: Charles C. Thomas. London: Baillière, Tindall and Cox. 1937.

This volume stands out from a bewildering mass of American medical and semi-medical literature as a thoroughly sound work filling a large and yawning gap. Perhaps the first monograph on the legal position of the radiologist had to be written by an American, because in the United States radiologists are apparently subjected to a legal persecution quite inconceivable by their English colleagues. They are constantly dragged to the courts for mishaps of all kinds, and often have to pay damages for trivial burns which the most careful precautions could not have avoided. In America radiotherapy and electrical treatment are popular, and are practised by a number of persons who are perhaps not adequately qualified. Although in this country one seldom hears of an action for negligence against a radiologist, other legal problems nevertheless arise from time to time. One of these is the question of who owns the *x*-ray films which a radiologist makes as part of his examination of a paying patient sent him by a general practitioner, and, more difficult, who has the right in a particular case to call for their production in court. Dr. Donaldson has a chapter on the ownership of films, headed with the appropriate quotation from *As You Like It*: "An ill-favoured thing, sir, but mine own." In it he collects a large number of decisions given by the courts of different States, and quotes a judgment of the Michigan Supreme Court holding that, in the absence of agreement to the contrary, *x*-ray negatives are the property of the physician or surgeon who makes them in the course of his treatment.

The author has, of course, since radiology is a department of medicine, to deal fully in his book with the general legal position of doctors. He therefore summarizes the law of contract and negligence as it affects the doctor; the law of agency, with its implications of vicarious responsibility for assistants and nurses; the law of evidence, and more particularly of *x*-ray films as evidence; and gives useful, down-to-earth advice for the radiologist who is required to testify in court. In short, this book receives full marks and is highly recommended to English radiologists, with the proviso that, although the principle underlying the American systems of law is much the same as in this country, the reader must make allowance for differences in details of procedure. The book must have been extremely difficult to write, because law and practice vary considerably among the many States of the Union, and the mass of reported cases is enormous and bewildering. There is a good bibliography and table of cases.

## PROFESSOR DREYER

*Georges Dreyer: A Memoir by his Wife, Margrete Dreyer.* With an introduction by Sir Charles Sherrington, O.M. (Pp. 249; 8 illustrations. 10s. 6d.) Oxford: Basil Blackwell. 1937.

This is a charmingly written account of the late professor of pathology at Oxford showing the happy home life of a busy and enthusiastic scientific worker. Dreyer, though a Dane by descent, had several associations with the country of his later life: born at Shanghai, he was thus nominally a British subject; his uncle was president of the Astronomical Society, and two cousins are respectively an admiral and a major-general in the British Navy and Army. Originally anxious to follow his father's profession, the Danish Navy, he was first drawn to medicine by his experience in a very severe attack of scarlet fever. Educated at the University of Copenhagen, he became a demonstrator under Salomonsen, and did much work on ultra-violet rays with Finsen. Among the visitors to the Copenhagen laboratories were Professor W. Bulloch and Dr. E. Frazer of the London Hospital, and thus it came about that he visited England and worked at Oxford, especially under the late Professor Gotch.

In 1907 James Ritchie, who since 1902 had been the first professor of pathology, left Oxford to become superintendent of the laboratories of the Royal College of Physicians of Edinburgh. This changed the place but not the character of Dreyer's activities, for, though his prospects of such a chair in Copenhagen were good, he was attracted to the life at Oxford which he knew, and was elected from the other "possibles," among whom was the late Sir F. W. Andrewes.

The wide field of his scientific work, especially on standards, and his happy faculty of attracting and inspiring young collaborators are shown in this volume, which begins with a pleasantly reminiscent introduction by his colleague, Sir Charles Sherrington.

## CLINICAL CHEMISTRY

*Chemical Procedures for Clinical Laboratories.* By Marjorie R. Mattice, A.B., Sc.M. (Pp. 520; 90 figures, 2 coloured plates. 30s. net.) London: Henry Kimpton. 1936.

The rather cumbersome title *Chemical Procedures for Clinical Laboratories* is perhaps less happily chosen than is the material out of which this book is compiled. Nowadays the better textbooks of this kind do not differ very greatly over a wide range in the methods they choose for presentation. We do not propose, therefore, to make a detailed commentary upon the author's main material, but rather to single out for mention some distinguishing features of her work. The first of these are the concise notes which follow the description of each method and which are carefully designed to guide the inexperienced over the difficulties and pitfalls that are likely to beset them. The notes, however, cover technical matters rather than general principles, and we feel that the latter could have been given more emphasis.

In a very full section on blood analysis the author's contributions to the accurate determination of creatinine should command special attention, while the part devoted to the urine is chiefly notable for the end chapter, which ably deals with an often neglected topic—namely, the detection and estimation of the heavy metals, not only in urine, but also in the other biological fluids. The author has also taken considerable trouble in the preparation of the fourth section, embracing miscellaneous biological fluids, and has collected very complete information upon their exact composition. She may rightly claim that it is done with a thoroughness not attempted by any other book, and indeed much of the tabulated data is not readily accessible anywhere in the literature. A valuable appendix includes a chapter on the calculation of results and errors, introducing the student to the use of statistical formulae. Here again we have evidence of the author's determination that the book should lack nothing that is essential to the full understanding of analytical methods.

## OPERATIONS ON THE EYE

*A Textbook of Ophthalmic Operations.* By Harold Grimsdale, M.B., F.R.C.S., and Elmore Brewerton, F.R.C.S. Third edition. (Pp. 322; 105 figures. 17s. 6d. net.) London: Baillière, Tindall and Cox. 1937.

The third edition of Grimsdale and Brewerton's textbook on ophthalmic surgery shows a radical departure from the previous editions in the elimination of much that is only of historical interest. In this sense the earlier editions had a completeness which the present edition lacks, but the deletion of matter of historical value has not been carried to the extreme of leaving the reader without a guide as to the evolution of present-day methods. The final result is that the book is more practical without having lost its individuality. The broad conception and wide sweep which pervaded the two earlier editions are left, and thus the student has still at his disposal the means of judging why modifications in operative procedure have been developed and why so many of these are stillborn. By drastic revision room has been found for bringing the subject-matter up to date, the most obvious addition being, of course, the section dealing with detachment of the retina.

A point of weakness in the book is that in their obvious fairness to other surgeons the authors have kept their own vast experience and surgical judgment in the background, allowing the various innovations of operative technique to speak for themselves. To the non-expert reader this has the disadvantage of not giving a clear lead as to which methods are routine procedures. A little dogmatism would not have been out of place. One aspect of modern work does not seem to have received due attention. Plastic operations used to be, and perhaps still are, an important part of ophthalmic surgery. The great changes that have taken place in this field are not clearly reflected in the present work—cases in point being the operations for ectropion and ptosis. These are, however, minor flaws in a book that has been an established guide for a quarter of a century. A word of praise is due to the hand drawings; in their clarity, economy, and effectiveness they are fit companions to the text-matter.

## MOTOR FUNCTIONS OF THE ALIMENTARY TRACT

*Normale und Pathologische Physiologie der Bewegungsvorgänge im Gesamten Verdauungskanal. Zweiter Teil, Klinik, Pharmakologie.* By Professor Dr. Med. Werner Catel. (Pp. 298; 123 figures. M. 15; GM. 16.50.) Leipzig: Georg Thieme. 1937.

Dr. Werner Catel, who is director of the University Children's Clinic at Leipzig, has continued his study of the motor functions of the alimentary canal, and in the second volume of his work on the normal and pathological physiology of the motor functions of the whole alimentary tract he deals with clinical and pharmacological considerations. The subject is covered in a thorough manner, beginning with the physiology of sucking, of chewing, and of swallowing, and then going on to consider the stomach and intestines in great detail. Radiological studies are made use of in all sections, and the later portions of the book, which deal with pharmacology, describe the effects of selected drugs in series of animal and human experiments. References to the literature are given in some detail, and the whole monograph can be recommended to those whose special interest lies in the alimentary tract in health and disease. The author's special clinical interest lies in the field of paediatrics, but his appointments apparently also include a general out-patient clinic, so that adults also come under consideration, and the clinical basis of the study is a wide one.

## Notes on Books

The forty-fifth edition of the *Annual Charities Register and Digest* has been published by the Charity Organization Society. The subtitle of this valuable reference book describes it as a "classified register of charities in or available for the Metropolis," but in fact the scope is much more comprehensive. Details are given of more than 2,700 institutions and societies, and the index, as usual, is particularly full. There is also a statistical chapter on the finance of the social services, voluntary and official, and a list of addresses of social case-work societies all over the world. Copies of the 1938 edition of this indispensable directory of charities and public institutions for the service of persons in trouble or need can be obtained from the Charity Organization Society, Denison House, Vauxhall Bridge Road, S.W.1 (cash price 8s. 6d. in the United Kingdom).

The continued popularity of *Black's Medical Dictionary* has called for a fourteenth edition, which completes the printing of 100,000 copies since its first appearance in 1906. The author, Dr. J. D. COMRIE, has taken full advantage of this opportunity of bringing the book thoroughly up to date in regard to recent medical advances. It now comprises more than a thousand pages of text and five hundred simple illustrations. It is published by A. and C. Black at 18s.

The *1937 Year Book of General Medicine* (The Year Book Publishers, Chicago, and H. K. Lewis, London, 12s. 6d.), one of the practical medicine annuals, now in their thirty-seventh year, is, like its immediate predecessor, divided into five parts, devoted respectively to infectious diseases, by George F. Dick; diseases of the chest excepting the heart, by Lawrason Brown; diseases of the blood and blood-forming organs and diseases of the kidney, by George R. Minot and William B. Castle; diseases of the heart and blood vessels, by William D. Stroud; and diseases of the digestive system and metabolism, by George B. Eusterman. Among the subjects receiving special attention are arthritis, immunization against diphtheria and influenza, prontosil therapy, air-conditioning, silicosis, pneumonia, carcinoma of the lung, collapse treatment of pulmonary tuberculosis, hypochromic and haemolytic anaemias, various types of leukaemia, hypertension, coronary thrombosis, electrocardiography, peptic ulcer, and diabetes.

*Food Tables*, by V. H. MOTTRAM and ELLEN M. RADLOFF (Arnold, 5s.), "is intended to fill a gap in the equipment of the dietitian and to supply a set of tables collected from authoritative sources of the composition of the most used of British foodstuffs." It is based on the most up-to-date analyses, in which the content of mineral substances has been accurately estimated and in which foods have been analysed as they are served at table. In all cases analyses are expressed in terms of portions of 100 grammes, 1 oz., 4 oz., and 1 lb., and figures are given where available not only for protein, fat, carbohydrate, and total calories, but also for calcium, phosphorus, and iron. In many cases figures are also given for waste, roughage, nonphytin phosphorus, and titratable acidity. The authors have done a very useful bit of work, and this little book will be invaluable to all who have to calculate and dispense diets.

The scope of *Studies on the Bacterial Flora of the Respiratory Tract in Acute and Chronic Bronchitis, Bronchial Asthma and Lung Gangrene*, by SVERRE DICK HENRIKSEN (Oslo: Jacob Dybwad, 1937, 18 Kr.), is indicated in the title of the monograph. It contains the results of investigations carried out over a period of four years into hitherto little studied problems at the bacteriological laboratory of the Norwegian Army. The author was able to demonstrate that the vast majority of cases of acute bronchitis are caused by a pure infection with *Hemophilus influenzae*, pneumococci, or haemolytic streptococci, or by a mixed infection with two of these organisms. The results in the other conditions studied were less clear-cut, but are of interest. The book is written in better English than most publications from Scandinavian countries.

That a third edition of Dr. R. RIVOIRE'S *Les Acquisitions Nouvelles de l'Endocrinologie* (Masson, 45 fr.) has been called for so speedily is not surprising, for it is very attractive both in matter and manner. The author ingeniously compares the newer phases of his subject to the transition from a pastoral to an agricultural state—mere surface grazing is no longer enough; we are ploughing deeper. He expresses legitimate satisfaction that several of his earlier hypotheses have been subsequently confirmed by recent observations. He now adds another theory—that myasthenia gravis is due to a thymic adenoma and is characterized by an excess of sodium and a deficiency of potassium in the blood—the precise opposite of the conditions obtaining in Addison's disease. Some interesting observations are recorded in support of this view. The chapters on the thyroid and pineal are new, and the whole book has been revised so as to bring it thoroughly up to date.

The International Congress of the Union of Therapeutics held its first meeting under the presidency of Professor Emile Buergi at Berne last May, and the bound volume of proceedings (624 pages in length) has been published by Medizinischer Verlag Hans Huber, Berne (price RM. 14.40). Copies may also be obtained from Masson et Cie, 120, Boulevard Saint-Germain, Paris, VIe (price 24 francs).

The monograph on *Castellani's Bronchospirochaetosis* (Palermo: L. Salpietra, lire 18), containing a brief introduction by Sir ALDO CASTELLANI himself, gives a concise and lucid account of a condition first described in 1905. Nineteen illustrative cases are recorded in patients aged from 20 to 61. An international bibliography of 142 references is appended.

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## BUG DESTRUCTION

The bed bug is not normally a vector of communicable disease, but everything else that can be said of it in its human relations is by way of dispraise. By means of its powerful beak it pierces the skin of man, raising a painful red blotch surrounded by papules. By means of a pair of glands situated in its thorax it diffuses a repulsive odour. It is a pest in houses, lying concealed by day in cracks and crevices and emerging at night to suck the blood of sleepers. The presence of bugs in dwellings, besides being vexatious to tenants, has also come to carry some suggestion of a social stigma, and quite a range of substances of varying degrees of activity has been employed from time to time for their extirpation. Turpentine and scalding water, corrosive sublimate and painters' blow-lamps, naphthalene and sulphur dioxide have all been applied without conspicuous success, and so recourse has been had, as a last resort, to gaseous hydrocyanic acid.

While fumigation with hydrocyanic acid has been found quite effective for the destruction of bugs, the method completely fails to conform to the requirement that a convenient disinfectant should not be unreasonably toxic to man, by attacking operators or dwellers in adjacent premises or by leaking out of stuffed furniture after the fumigation is over. When the acid is employed for killing rats in the holds of ships the whole procedure can be kept under strict control, but its routine use about people's homes for the destruction of insects, even granted that bugs are a pest and that all precautions are taken, as we believe they are, conveys to the mind a suggestion of incongruity between the risks taken and the results achieved. The report printed elsewhere in this issue (p. 160) is to the effect that the vapour of heavy naphtha may be found on extended trial to possess a bug-destroying power which is for practical purposes equal to that of hydrocyanic acid while at the same time non-toxic to man. The method recommended is to spray the naphtha on the surfaces to be disinfected and also on sheets of Egyptian cotton hung on frames of electrical conduit tubing three inches from the walls, with a view to producing a concentration of naphtha vapour in the air of the room. The room is then sealed and kept sealed for twenty-four hours. Just before sealing up the room a clockwork-driven delayed-action naphtha sprinkler is placed in position and set to deliver a reinforcing charge of naphtha from nine to eleven hours later. This is done in order to ensure that naphtha vapour remains in the air in lethal concentration. When the room is unsealed all bugs should be dead. Lethal concentrations of naphtha for bugs are from 0.15 per cent. upwards, with twenty-four hours' exposure. It is important that the room temperature should not fall below 50° F., and preferable that it should be 60° F. or over. Owing to the rapid escape of heat from houses, rooms for disinfection in winter should be raised to 80° F. before the process begins. As the flash point of the naphtha is 105° F. no naked lights or tobacco smoking can be permitted. The only instance of disability among the workmen employed on the tests was one case of irritation of the skin of the hand, which readily yielded to lanoline. With suitable modifications the method can be applied to empty or furnished rooms or vans containing furniture.

On weighing up the results of the tests which have been carried out the impression is distinctly favourable to the tentative claims made on behalf of heavy naphtha. The reporters have rendered a useful service by their work with the substance. If bugs can be killed with ease and precision by its means there will be no need for operators or others to incur the major hazard of hydrocyanic acid.

## DIETETIC THERAPEUTICS

At the present time the subject of dietetics is front-page news. That is unfortunate for its consideration in an atmosphere of scientific calm. There would appear to be two main reasons for this popular interest—one good, the other bad. The good one is that our social conscience is rightly stirred by the question of unemployment and the risks of consequent malnutrition; there is a strong desire to see that the available resources are wisely applied. The bad reason is symptomatic of the widespread neurosis of the present day. Neurosis is generally characterized by a regression to more primitive modes of thought, and for the infantile mind the working of its alimentary canal is the prime interest—an interest which, indeed, the mother and nurse foster. An anxiety state therefore generally involves a certain fussiness about food. Such a patient seeketh after a prescribed diet and will not be comforted without one, thereby often falling a not unwilling victim to cranks.

The end of the nineteenth century saw the quantitative aspect of diet firmly established: the role

of each foodstuff, their minimum and optimum quantities, the total calorie requirement—all these things were generally agreed. It was known, however, that a mixture of chemically pure proteins, carbohydrates, and fat, even with the addition of the salts extracted from cow's milk, would not sustain life. The only explanation then available was that some at least of the salts must be present in organic combinations such as are found in animal or vegetable foods. Then early in this century came the realization of the great importance of certain qualitative as opposed to mere quantitative factors. When Sir Frederick Gowland Hopkins found that the addition of a few cubic centimetres of milk to the carefully purified diet of rats made all the difference between ability and failure to grow, a new era in dietetics dawned. True the influence of lime juice (or, better, lemon juice) in the prevention of scurvy was known, as was the effect of polishing rice in inducing beriberi; but now the whole question of deficiency diseases opened up. Looking back, it is perhaps curious that this new idea developed rather slowly. It was the consequences of food restriction during and after the war which focused attention on the subject, though Casimir Funk had labelled these accessory food factors "vitamines" before the outbreak of hostilities had necessitated his return to his native land. He was under the impression that these factors were amines, but, this proving incorrect, the non-committal name of vitamins was substituted. Yet even in 1918 controversy still raged as to whether rickets was a disease of diet or of the dark.

It is this retrospective spirit that adds point to Dr. Leslie Cole's address, "Diet in General Practice," printed at page 157 this week. It may be safely asserted that the ordinary mixed diet of the comfortably situated person is not likely to suffer in quality; there will be no lack of accessory food factors. The more probable risk is that the diet may be excessive in quantity. Danger as to quality arises, however, under two conditions—where the total intake is grossly reduced by poverty, and where it is greatly limited as to quantity and variety by disease. The danger of the former condition is now realized, though the issues have been to some extent obscured by political controversy; it is the risks in the latter circumstances to which Dr. Cole usefully calls attention. The study of minor degrees of vitamin deficiency has now reached a more accurate stage by the introduction of quantitative methods of estimating this lack. Thus we have the dark adaptation test for vitamin A (M. K. Maitra and Leslie Harris),[1] the urine saturation test for vitamins $B_1$ and C, and the blood phosphatase test for vitamin D. Particularly has an unsuspected deficiency in vitamin C been revealed by the test dose of ascorbic acid, which is excreted by those already taking a sufficient supply of the vitamin but retained by those previously inadequately supplied. Recently in our columns Lazarus[2] reported an investigation of fifteen cases of haematemesis and melaena, in thirteen of which a deficiency of vitamin C was revealed; this was of a severe degree in seven of the cases. The addition of such things as orange juice, marmite, and cod-liver oil to the diet of these patients has been recommended and is a rational measure. Nor is this the only instance: in rheumatoid arthritis a similar vitamin deficiency has been observed. Evidently we are entering on a new phase of dietetic therapeutics, and one which is based not merely on general impressions and guesswork but on accurate observations quantitatively controlled.

[1] *Lancet*, 1937, **2**, 1009.

## TREATMENT OF ANTERIOR POLIOMYELITIS

Much interest has been aroused lately by reports which have reached this country of the results achieved in Australia by what is known as the Sister Kenny system of treating anterior poliomyelitis. In this issue of the *Journal* (p. 168) Dr. F. H. Mills describes this treatment, expounds the principles on which he believes it to be based, and offers certain criticisms of the methods of treatment which have for many years been in vogue in most countries. The main criticisms of the orthodox routine are that complete rest and immobilization and the use of splints induce trophic changes, minor deformities, and stiffness of joints; and that re-education is delayed far too long, the conventional technique being crude, apt to cause fatigue and encourage trick movements, and therefore ineffective in restoring the maximum recovery of muscle. In Sister Kenny's method movements of the limb are deliberately carried out in the pyrexial stage for the relief of pain, assisted by some form of local heat. No splints are used, the paralysed limbs are sprayed with hot and cold water (the patient being in a bath), and at the end of the first week what is described as a finely graded system of re-education is begun. So far only thirty-five patients in the early stage have been treated in Australia, and 1,400 chronic cases have been treated on similar lines, with, it is claimed, much improvement. Sister Kenny's technique is now being tested in this country at Queen Mary's Hospital, Carshalton (L.C.C.), where a ward has been set apart for what is undoubtedly a reasonable and most interesting clinical experiment. The ultimate evaluation of what at first sight seems to be a revolutionary departure from accepted routine will depend on a careful study of a series of cases which have been accurately documented from the beginning. There has been much inexact writing about recovery in poliomyelitis, and particularly about the limits of the

[2] *British Medical Journal*, 1937, **2**, 1011.

so-called recovery stage during which spontaneous return of function is seen in muscles previously weak or completely paralysed. A valuable contribution on this subject from the Royal National Orthopaedic Hospital, London, appears in our current issue at page 164. In this article Mr. N. M. Harry shows that in a series of thirty-six cases treated by the orthodox methods of rest, splinting, and a carefully graded system of re-education striking and rapid recovery of muscle function occurred only during the first year, and more especially during the first six months. The system of muscle-charting employed at the Royal National Orthopaedic Hospital is admirable in its simplicity, and it is only upon such data that authoritative statements on recovery in poliomyelitis can ever be based. Similar criteria have been used by the Council of Inquiry composed of distinguished consultants in Sydney, who have recently reported[1] to the Minister of Health of New South Wales on the results of Sister Kenny's treatment at the Royal North Shore Hospital. The small series of cases under review were all patients with poliomyelitis of some years' standing. The council expressed the opinion that although there was considerable improvement in several cases recovery from paralysis had not taken place at a greater rate or to a greater extent than would be expected under orthodox methods of treatment. Furthermore, in its opinion Sister Kenny's treatment did not embody any new general principle. At the same time the council recommended that the work of the Elizabeth Kenny clinics should be incorporated in a comprehensive scheme for the treatment, education, and rehabilitation of the cripple in New South Wales. An inspection of Sister Kenny's treatment at work shows that it embodies many re-educative manœuvres which could be used with advantage in centres where poliomyelitis is treated on orthodox lines. As a distinct system of treatment the method is obviously still *sub judice*, and a final opinion must be withheld until a larger series of fully documented cases have been examined and reported on by an impartial committee of experts.

[1] *Med. J. Austral.*, 1937, **2**, 888.

## OPTO-CHIASMIC ARACHNOIDITIS

The "pathology of the living" has added to the pituitary syndrome of bitemporal hemianopia a new clinical fact—namely, that the syndrome is not necessarily of pituitary origin. As neurological surgeons have been exploring the pituitary region with greater frequency they have not uncommonly found that an operation undertaken in the full confidence of finding a pituitary tumour revealed no such condition. It has of course been recognized for some time that lesions in the pituitary region are of sellar and suprasellar origin. What is new, however, is that neurological surgeons have come to regard a localized meningitis at the chiasma as a distinct clinical entity. Earlier observers when confronted with this localized inflammation assumed that it was either a reaction round a tumour or a cyst formation of obscure origin. As early as 1924 Horrax, when analysing cases in Cushing's clinic, found thirty-three in which a cerebral tumour was simulated by arachnoidal cysts, and drew attention to one particular form in which the arachnoiditis was situated at the chiasma. Gordon Holmes in 1929 reported two cases operated upon successfully so far as vision was concerned, in one of which, treated by Percy Sargent, the condition dated back to 1919. The clear recognition that a clinical entity was being dealt with, and that it was indeed a localized basal arachnoiditis, not a secondary reaction to adjacent tumours, came with almost simultaneous papers in 1931 of Heuer and Vail in France and Craig and Lillie in the U.S.A. Since then a literature has grown up on the subject, and a valuable review of it is contained in a monograph by J. Bollack, M. David, and Puech,[1] recently published by the French Ophthalmological Society. An interesting clinical picture emerges from their detailed study of the sixty-three cases they have collected from the literature and the sixty-six they have studied personally. That the condition is no rarity is clear from the fact that of the 254 transfrontal explorations undertaken at Dr. Clovis Vincent's clinic at the Pitié during the past six years no less than seventy-one, or 27 per cent., proved to be cases of arachnoiditis, almost as frequent as pituitary adenoma, of which seventy-four cases were found. The commonest form of arachnoiditis is of the adhesive type, the adhesions ranging from fine strands to massive sheets of exudate sometimes containing calcareous flakes. A serous type with cyst formation is not infrequent, while the least common type is one in which there is minimal exudate but grey, unhealthy-looking optic nerves and chiasma. The optic nerves and the chiasma may themselves appear variously, ranging from engorgement and oedema to atrophy with fibrosis, while in some cases there are no changes at all. There is no predilection as regards age, though at different ages different aetiological factors play a dominant part. The commonest exciting factor is sepsis in the mouth and sinuses, and meningitis—syphilitic, tuberculous, or colibacillary—is not infrequent. The route of infection may be haematogenous, as is probably most often the case, or the arachnoiditis may be caused by a contiguous spread of infection from an infected sphenoidal sinus. Trauma appears to have played an undoubted part in some of the cases. The fully developed pituitary syndrome, so far as ocular manifestations are concerned, may be present, but sometimes signs suggestive of unilateral or bilateral retrobulbar neuritis with the corresponding subjective findings may be the only features. The field defects may be of a bizarre distribution and not at all of the type of more or less frank bitemporal hemianopia. An important consideration is the fact that while classical signs of cerebral tumour may be present there are generally no neurological findings of any significance, though there may be such unusual features as diabetes, disturbances of the adiposogenitalis type, and indications of basal meningitis elsewhere. A capricious progression in symptoms, with the discovery of aetiologically significant factors, suggests a diagnosis of this condition. As the authors put it, in a schematic way

[1] *Les Arachnoïdites opto-chiasmatiques*. Paris: Masson et Cie, 1937.

it may be said that the affection gives hybrid symptoms of a tumour together with inflammatory reactions along the optochiasmic tracts. What is of particular import is the fact that operations to free the optic nerves and chiasma from the adhesions give favourable results in a good many cases, though in some the operation may have to be repeated. In assessing prognosis age is an important factor. The arachnoiditis of childhood is generally due to a localized meningitis. In the aged, however, the prognosis is poor, since in some cases the reaction is secondary to lesions of cerebral vessels. This monograph, with its careful documentation, opens a new chapter in the study of lesions of the chiasma, a structure which Cushing has aptly described as the cross-road at which the ophthalmologist, otologist, endocrinologist, and neurological surgeon meet. To the ophthalmologist it is of particular interest in helping to clear up obscure points in the symptomatology and aetiology of optic atrophy, and in enlarging the limited field where treatment of optic atrophy is helpful. This new conception has, for one thing, made the puzzle of retrobulbar neuritis of obscure origin a little less formidable.

## ARTIFICIAL LIGHTING AND THE WORK OF WEAVERS

There can be very few industrial occupations in which adequate lighting is more important than in weaving, and Report No. 81 of the Industrial Health Research Board, by H. C. Weston,[1] which deals with the effects of various conditions of artificial lighting on the performance of weavers, is likely to be of considerable practical value. In this country the usual method of illumination in weaving sheds is by means of lights fixed vertically above the looms, but an investigation made in Germany appears to indicate that it is better to direct the light across the looms from the side. In order to test the two methods a group of six night-shift weavers were kept under observation for successive periods of five weeks at a time, and their output of cloth was compared with that of a corresponding group of day-shift weavers operating the same looms. The results obtained showed that when the system of overhead localized general lighting which is customarily employed in weaving sheds was doubled in intensity, the personal efficiency of the weavers in mending thread breakages and doing other hand work increased no less than 24 per cent., while there was a substantial improvement in the quality of the work done. These improvements were surprising in view of the fact that the illumination previously used had apparently caused no dissatisfaction in the weavers. A still further increase in illumination had no better effect than its doubling, and the other systems of lighting tried, whether localized or lateral, did not give such good results as the one mentioned. It is to be remembered that the weaver has constantly to be on the alert, not only to mend breakages in warp threads but to note when the weft threads are running low and fresh shuttles are required. If the cloth is a fancy one several shuttles are used, each containing weft of a different colour. As the weaver has to superintend two looms they often need attention at the same time, and his task seems a very trying one. Moreover, he is often subject to adverse environmental conditions such as high temperature and a humid atmosphere.

[1] Medical Research Council, Industrial Health Research Board. Report No. 81. H.M. Stationery Office. Price 9d. net.

## A PIONEER IN TUBERCULOSIS

Last year we paid our tribute[1] to Sir Robert Philip on the occasion of the fiftieth anniversary of the foundation in Edinburgh of the first tuberculosis dispensary in the world. Few would question Philip's claim to a place among the outstanding names connected with tuberculosis, but perhaps not many are familiar with the details of the part played by him in developing an interest in the control of the disease in this country and abroad and in guiding this interest into practical channels. The publication of a volume[2] containing twenty-four of his papers and addresses written or delivered in this country and elsewhere between 1898 and 1934 should enable everyone fully to appreciate his pioneer work. So much of what he said in the past holds good to-day, so little has been contradicted by later events, that at times, in view of the scanty experimental and pathological evidence then available, one feels like ascribing to him a prophetic sense. Sir Robert Philip would probably himself no longer emphasize the value of "aerotherapy" at the expense of rest, insist on the role of the lymphatic system in the dissemination of tuberculosis, or claim that the pharynx is a common portal of entry for the bacillus. On the other hand, how strongly do we feel like applauding his reiteration that tuberculosis must invariably be regarded as a general disease, his arguments in favour of having sanatoria built near towns, or the wise conclusion—of increasing importance—that well-equipped laboratories "in close relationship to tuberculous clinical material" are "a primary need"! His faith in tuberculin as a mode of treatment makes one wonder whether its almost total rejection in therapy has not been too hasty. And though we might not agree with "distrust in its value I have found most commonly expressed in loudest terms by those whose acquaintance with tuberculosis is limited and whose knowledge of the actual treatment is fragmentary or second-hand," the need for a re-trial of tuberculin therapy by competent workers should perhaps be considered. The history of the development of tuberculosis control as depicted in these pages shows well its pendulum swings. The sanatorium movement is a good example: the long delay in recognizing the value of this institution was followed by an over-enthusiasm which has given way to a more reasonable appreciation of its true function. But the pendulum still moves, and there is a danger of fresh air and good food being too thoroughly ousted in favour of major surgical procedures. On the other hand, the dispensary movement still tends to emulate the tortoise,

[1] *British Medical Journal*, 1937, **1**, 1165.
[2] *Collected Papers on Tuberculosis*. By Sir Robert W. Philip, F.R.C.P. London: Oxford University Press. (21s.)

for even to-day few tuberculosis dispensaries fulfil in practice the wide vision of Philip. Some of the historical details, particularly those connected with Koch, are fascinating, and should be read by every student of tuberculosis. It is inevitable that there should be much repetition of material in the papers; but those who might complain should remember that it was this very repetition, this insistence on bringing the same points forward, that did so much to awaken public consciousness to the gravity of the problem and led to the development of a scheme of control which, however faulty in its application, is basically the soundest means so far evolved to combat the disease.

## THE ACTION OF THE CORONARY ARTERIES

Physiologists differ widely on the question of the control and mode of action of the coronary arteries. Whenever one school attributes a vasodilator influence to the sympathetic another considers the control of these vessels similar to that of the peripheral arterial system. In a recent paper Champy and Jacques-Louvel[1] draw attention to the need for distinguishing between true vasodilatation and vasodistension. Working with the frog's mesentery, the authors observed the effects of a drop of adrenaline (1/1,000) on the calibre of the vessels: all the vessels—arteries, veins, capillaries—responded with an unequivocal constriction, the veins, however, showing less response than the arteries. Repetition of this experiment, with the root of the mesentery clamped so as to obstruct the venous return, led to the finding that, while the arteries constricted when treated with the adrenaline, the veins dilated rapidly. Such an effect is due not to a dilator action of adrenaline on the veins but to the inability of the constrictor action on the veins to resist the haemodynamic force exerted by the contracted arterial musculature. Such a mechanism is proposed by the authors to explain the vascular engorgement produced in certain vessels—for example, the pulmonary and intestinal vessels—by an intravenous injection of adrenaline. It is to be noted that in almost all cases in which intravenous adrenaline gives rise to vasodilatation the effect of local application of the same agent is vasoconstriction. Arguing on these lines, the question is asked whether the usually accepted effect of adrenaline in dilating the coronary vessels cannot be explained in a similar way. In an investigation of this the coronary arteries of a horse's heart were studied immediately after death. Segments of the coronary arteries were attached to a graduated reservoir containing an appropriate perfusion fluid, and the rate of flow through the segment at constant temperature and pressure was measured with and without the addition of adrenaline. The method used was admittedly crude, but the results obtained were sufficiently clear-cut and uniform to warrant conclusions. It was first of all demonstrated that adrenaline had no effect on the coronary segments from the aorta to the bifurcations. The interventricular coronary segments, however, were definitely sensitive to adrenaline, thus exhibiting an autochthonous vasomotor system, which was still sensitive an hour after the death of the animal. So pronounced a difference in reaction led the authors to attempt an explanation on structural grounds. Histological study showed that the coronary arteries from their origin to their bifurcation are similar in structure to the aorta—that is, they consist mainly of elastic tissue and hence would not be expected to respond to adrenaline. The interventricular coronary branches are, on the other hand, of the muscular type of vessel, and hence much more prone to changes in calibre. Besides circular muscular fibres the interventricular branches possess bundles of longitudinal fibres, the latter being situated near the periphery of the vessels while the former are subendothelial. The longitudinal fibres are conspicuous in the horse, but have also been described in man and in the guinea-pig. Thus these branches of the coronary vessels may be constricted by the circular fibres and dilated by the longitudinal fibres, and it seemed probable that the effect of adrenaline would depend upon the degree to which this agent came into contact with the relevant fibres. On following this up the authors found that impregnation of the walls of these coronary segments with adrenaline led to vasodilatation. The conclusion is, therefore, that the constriction observed on perfusing adrenaline through the lumen of the vessel is brought about by the circular fibres, to which the active agent can penetrate while the longitudinal fibres remain more or less unaffected. The mechanism of control of the coronary vessels appears thus to be twofold—mechanical in the parts mainly composed of elastic tissue, and nervous in the parts composed of circular and longitudinal muscular tissue. The therapeutic possibility of adrenaline in cardiac infarction arises, and indeed some success has been reported by Donzelot. Justification for this lies in the fact that the circular fibres possess relatively poor contractile power compared with that of the longitudinal fibres. The hypothesis that vascular spasm is responsible for certain cases of coronary insufficiency is also called in question, and it is suggested that they are due rather to insufficiency of the dilator mechanism.

[1] *Presse méd.*, 1937, **45**, 857.

## NEW YORK HEALTH RECORDS

In his report on the health of New York City during 1937 the Health Commissioner, Dr. John L. Rice, announces the lowest infant mortality rate, the lowest death rate from typhoid fever, the lowest tuberculosis death rate, and the lowest proportion of deaths of mothers in childbirth. All four are the best records ever attained in the history of the city. For the reduction in the maternal death rate Dr. Rice gives credit to the New York Academy of Medicine and the county medical societies, which have done effective work in this field. With a total of 101,988 births during the year and 77,466 deaths, there was an excess of 24,522 births over deaths. During the past ten years there has been a constant decline in the birth rate; now for the first

time the rate is higher than it was in the preceding year. Dr. Rice suggests that the change resulted from the better economic conditions prevailing during the greater part of 1937. The 77,466 deaths represent a death rate of 10.4 per 1,000 of population, "a remarkably low rate for a large city like New York with its housing problems, its many foreign born and with so many persons unemployed. We would have made even a better showing had it not been for a sharp outbreak of epidemic influenza beginning at Christmas, 1936, and lasting throughout January of 1937. This outbreak cost over 1,500 lives, a loss more than double the deaths caused by measles, whooping-cough, scarlet fever, diphtheria, and typhoid fever all combined." Commenting on the 6,505 deaths from pneumonia during the year, Commissioner Rice expresses the hope that the pneumonia control programme recently inaugurated by the Department of Health will soon begin to show results in a reduction of the death rate from this disease. "Early diagnosis and prompt use of the proper serum after the type of pneumonia germ has been determined will undoubtedly save many lives. Our laboratory has effective serums available for five or six of the most prevalent types, and these account for about four-fifths of all the pneumonias now occurring in the city. We have typing stations in each of the boroughs, and the one in Manhattan gives a 24-hour service, including Sundays and holidays." A feature of the Department's activities was the development of the campaign against syphilis. The close of the year saw twenty health districts organized, each with a full-time health officer in charge; nine of the centres are housed in new buildings specially planned to provide complete health services for the people of the district. The Department of Health now has 385 typhoid carriers under supervision. They report to the Department twice a year and are given instructions regarding the precautions to be taken in order to prevent the infection of others. They are not permitted to engage in food-handling occupations. Thanks to the sanitary supervision and chlorination of the municipal water supply, and the pasteurization of all milk sold in the city, New York has had no water-borne or milk-borne outbreaks of typhoid fever during the past quarter of a century.

## HOSPITALS FOR CIVILIAN CASUALTIES IN AIR RAIDS

As was indicated in the course of proceedings upon the Air Raid Precautions Bill, the Government has for some time had under consideration the arrangements to be made for civilian casualties in the event of an emergency. Local authorities are already making in their air raid precautions schemes provision for the establishment of clearing hospitals, and it has now been decided that, with a view to making the fullest use of the existing facilities and extending them if necessary, a complete survey of the hospital accommodation of the country (including any earmarked as clearing hospitals) should be carried out. The survey will be undertaken in England and Wales by the Minister of Health, and in Scotland by the Department of Health for Scotland. In England it will be made through the agency of a staff composed of the general inspectors of the Ministry and certain selected medical officers. In Wales it will be made by the Welsh Board of Health. These officers have been instructed in the first instance to confer with medical officers of health concerned and with the leading representatives of the voluntary and other hospitals. So far as the provision of accommodation in or on the sites of mental hospitals and mental deficiency institutions is involved, the survey will be undertaken in England and Wales by the Board of Control, and in Scotland by the General Board of Control for Scotland.

## IRISH DISHES

Miss Florence Irwin has brought together a number of dishes designed "both to nourish and to please"—as Mr. St. John Ervine says of them in his entertaining preface to the book.[1] In it there is also much that is instructive. For here the non-Hibernian cook may learn—learning often sorely needed—how to treat the potato with the culinary consideration it deserves. In vain may expert committees of the League vaunt the virtues of the vegetable, in vain advise its substitution for white flour—that frequent disturber of gastro-intestinal peace—so long as there are cooks who make of this goodly tuber a soapy sacrifice. Miss Irwin tells of ways in which it may be rightly cooked and served—jacketed and unjacketed—of potato-cake and potato-pudding, of potato-oaten farls, and "champ"; chive, nettle, parsley, pea, and scallion. She tells, too, of right uses to which oatmeal and wheatmeal may be put and of other things showing how "protective foods" may be combined to form delicious dishes. Poets, politicians, orators, and saints, doctors, divines, and Presidents of the United States are among Erin's gifts to the English-speaking race: these, and the staple breakfast dish of Britishers where'er the sun doth his successive journeys run. Who knows what the far-flung Empire owes to the union of the bacon with the egg? Yet, as Miss Irwin tells us, the conjunction came about "by the grace of God and the irregular proclivities of a lazy hen." Champ, stirabout, and brotchan roy; broth, brawn, and real Irish stew; durgan, flummery, and sowans—these are among the dishes of which, we feel, nutrition experts would approve; but "soda-bread" we think they would eschew. "Synthetic flour, synthetic fruit, synthetic juices, and synthetic bread must one day result in synthetic people. It is to avoid that calamity that this book is published, and I wish, indeed, that it may fulfil its holy purpose." So says St. John Ervine—and we endorse this hope.

Professor C. Regaud has retired from his position as director of the Radium Institute of Paris and has been succeeded by Dr. Antoine Lacassagne.

[1] *Irish Country Recipes*. Compiled by Florence Irwin. Belfast: The Northern Whig, Ltd. (2s. 6d.)

# SURGICAL PROCEDURES IN GENERAL PRACTICE

*This is one of a series of articles contributed by invitation*

## TREATMENT OF WOUNDS—II

BY

**W. H. OGILVIE, F.R.C.S.**

*(This is the second of two articles on the treatment of wounds, of which the first appeared last week at page 132.)*

### Dressings

A dressing is no magic talisman; it is the tissues themselves that do the healing. The dressing serves two purposes only: to prevent fresh infection and to afford mechanical protection to the wound. Frequent changes are therefore valueless and may be harmful. The dressing should only be changed when it has ceased to perform the above functions—that is, when it is soaked or displaced—or when access to the wound is required for the removal of stitches or drains. The daily dressing—which was formerly a ritual—merely delays healing by damaging the wound edges and the freshly growing cells in skin and granulation tissue. Gauze soaked in an antiseptic has little advantage over sterile gauze, beyond giving a further guarantee that its sterility is a matter of fact rather than faith. Antiseptics are at their best *in vitro* and on blotter circulars. Few bacteria are killed by their action in a wound, and then only those in the discharge, the defeated enemy, of no further fighting value, escaping in the rout; the shock troops, the organisms multiplying in the tissues, are unharmed and possibly favoured by the application of chemical agents, and can only be vanquished by the action of the tissues.

A respect for natural defence mechanisms dominates the modern attitude towards dressings, which demands rest and non-interference, combined in the presence of sepsis with free drainage. Vaseline, which is entirely innocuous and easily sterilized, is an excellent medium both for dressing and for drainage. A wide-mesh net of vaseline gauze is a valuable surface dressing where a large flap of skin has been torn back and sewn into position again. The vaseline net keeps the edges secure and protects them from injury, while discharge can escape through the meshes and outer dressings can be applied to soak up fluids and distribute pressure on the flap without disturbing the healing edge. Such a vaseline net with eight meshes to the inch is obtainable readily sterilized as "tulle gras lumière." Ordinary gauze impregnated with sterile vaseline is used for the drainage of wounds that have become infected. The gauze may be packed loosely into all parts of the wound, and heaped up on its surface. Wounds so treated need dressing at infrequent intervals only, and the scar after they have healed is remarkably supple.

Tannic acid (2.5 per cent. solution), the preparation widely used in the treatment of burns, is an excellent dressing for clean superficial wounds inflicted with a sharp knife or razor, particularly those in which part of the tip of a finger has been shaved off. The tannic acid forms a firm coagulum that remains as a protective scab till the wound underneath has epithelialized completely.

Antiphlogistine provides a useful first dressing for those large and dirty grazes on the shins, knee, or forehead, which are often the result of motor accidents or falls on the playground. The clay poultice is most efficient in removing collections of grit and debris from the deeper layers of the skin where they have become embedded, and where, if not removed early, they will remain as disfiguring "tattoo marks."

### Drains and Sutures

A drained wound should usually be left alone for forty-eight hours. If at the end of this time the appearance of the wound and its surroundings indicates that there is no infection the drain should be removed; if there is doubt it may be shortened and removed on the following day. Where infection has taken place the drain must be left till such infection has been overcome. Nothing is more harmful than to remove drains and reinsert them after boiling, to twist them round, or replace them with others. The original drain has its own bed; a new one has to make a fresh bed by killing tissues. In the abdomen we are anxious to remove drains early, but in soft parts it is better to leave them too long than to remove them too soon. Premature removal may mean the accumulation of septic material in the depths of the wound and the formation of an abscess, while late removal implies no more than a few days' delay in healing.

In a wound that has been brought together without tension the cut is completely epithelialized in four days. Stitches that are approximators only should be removed at this stage, while those that take or relieve tension should be left in for eight or ten days. After ten days stitches merely cut out and serve no useful purpose. If tension on the edge must still be combated this is best done by strips of elastoplast fixed outside the wound, and tied with tapes over the dressing.

### Treatment of Sepsis

Sepsis is rarely encountered in wounds that have been excised and packed open at the start. It is seen in the untreated wound brought late to the doctor, or in those wounds that have been closed without, or with insufficient, drainage. The treatment of sepsis as a late complication is by immobilization and free drainage. Immobilization is of paramount importance, and should be complete and uninterrupted. This usually means enforced recumbency, the application of a splint, and the avoidance of frequent dressing. In a septic wound of the arm or leg it is an excellent plan to sling the whole limb in a Thomas's splint from an overhead frame. Two alternative methods of dressing, both of which allow free drainage without interference, may be recommended for septic wounds—namely, the vaseline pack, and intermittent irrigation with Carrel tubes. The first is suitable for the open wound of simple shape, the second for one with pockets or underhung flaps. In either case the pack or tubes are preferably put in under gas anaesthesia.

After the stitches have been removed and the wound has been opened up, vaseline gauze is tucked lightly into its recesses and heaped over the mouth and edges, and an abundant dressing of wool is placed over the part to take up discharge. Unless there is any indication in the condition of the patient or of the limb outside the bandages that progress is not satisfactory, this dressing is left unchanged for a week at any rate, or for such longer period as the smell of the dressings will allow. The cavity closes rapidly round the vaseline gauze, the healthy granulation tissue pushing out the plugs, and after two changes it is

often possible to approximate the edges of the wound with strapping.

In the Carrel-Dakin method the wound is similarly opened, and Carrel tubes are put into each of the main compartments of the wound. These are rubber tubes, a quarter of an inch in diameter, closed distally by a silk ligature and perforated for two or three inches proximal to this by pairs of holes, one millimetre in diameter, at every half-inch. The skin opening may be partly closed again with stitches. Gauze is lightly packed round the entering tubes, and the whole part is covered with an abundant dressing of "fluffed" gauze and wool, through which the tubes are brought in a bunch. Thereafter half an ounce of Dakin's solution is injected under pressure through each tube every two hours, night and day, either with a glass syringe or from an ampoule the outlet of which is controlled by a spring clip at least four feet above the wound. The limb need not be removed from the splint, nor need the dressings be changed, until sepsis has been overcome and the tubes can be removed. Immobilization is therefore entirely adequate. (It is an essential of the Carrel-Dakin method that the injections should be made under pressure, yet even to-day it is not uncommon to see the tubes joined up to a continuous-drip apparatus. With low pressure and continuous flow most of the holes will become blocked and the fluid will trickle from a few only; with high pressure an even jet will emerge from all the holes in all the tubes.)

The hot fomentation is attacked on all sides, but it remains one of the most admirable methods for the temporary treatment of superficial sepsis. Cuts, grazes, and tears which look dirty, and stitched wounds the skin edges of which have become red and angry after forty-eight hours, will usually clear up like magic if fomented four-hourly for one or two days. The hot boracic fomentation does not rely on heat, boracic, or lint; the heat is evanescent, the boracic harmless to bacteria, and the lint one of the worst absorbents. The magic in the dressing lies in its power of capillary absorption—the power of a dish-cloth soaked and wrung nearly dry to mop up milk. The only requirements of such a dressing are that it shall be sterile or antiseptic, highly absorbent, moist but not wet, and kept moist throughout. Surgical gauze, wrung out of a one in four solution of warm eusol, fluffed out over the wound to the thickness of one inch and then covered with oiled silk and wool, forms the best compress.

### Cut Tendons

The general principles of wound treatment apply equally to those involving tendons, and indeed abolition of infection and healing by first intention are of extreme importance if any useful amount of independent movement is to be obtained in the sutured tendons. Cut tendons are most commonly encountered in wounds of the wrist, palm, back of the hand, or fingers. These wounds are usually caused by broken glass or slipping bread-knives, and are therefore clean-cut and not grossly contaminated. In wounds due to broken glass it must be remembered that a great many tendons, and one or more nerves and arteries, may have been cut through an apparently small wound, and that broken fragments of glass are often lying loose in the deeper parts of the wound, and may be left behind unless a careful search is made for them. The cardinal points in the repair of such a wound are recognition of all cut tendons, exact anatomical repair, relaxation after suture, and early movement.

An exact analysis of the damage is best made by testing movements in the conscious patient, and determining in this way which tendons have been cut. The recent Fellow may feel certain that his anatomical knowledge will allow him to identify every severed structure once the wound has been opened in the bloodless field allowed by a tourniquet. But he will be surprised to find how the synovial sheaths, structures hardly seen in the dissecting room, are converted by effused blood and the oedema of injury into gelatinous opaque masses in which cut ends are difficult to see, let alone label. The operator must be prepared to cut away enough of this red jelly, and by tabulating the proximal end according to its anatomical site, and checking the distal one according to the movement it produces, pair off all tendons which he knows to be cut. Elaborate suture of tendons is a mistake; it takes time, the extra suture material produces an extra reaction of repair, and the average result is not equal to that obtained by simple means. A single stitch of 00 catgut on a very fine cutting needle should be passed through both ends of each tendon in the same plane about three-sixteenths of an inch from the cut surface, pulled enough to appose but not angulate the ends, and tied. When all have been sutured the synovial sheath is wrapped over the group with one or two interrupted stitches of the same material and the wound closed.

After suture the limb should be splinted in such a position as to relieve tension in all the repaired tendons—for example, in cut wrist, with the wrist flexed. The position of relaxation must be maintained in any case for a week, or till the skin stitches have been removed and the clean healing of the wound is assured. The time when movement should be started varies; early movement favours freedom from adhesions, but risks the security of the suture. On the whole, it may be said that flexor tendons, lying in fibrous tunnels and enclosed in synovial sheaths, are much more liable to form adhesions than the extensors in their indefinite synovial and areolar coverings. Movement of cut flexor tendons should therefore be started after a week, whereas cut extensor tendons may be immobilized up to three weeks. The movements in either case should at first be voluntary.

The finger tendons are often severed through very small punctured wounds, or in the depths of a cut that appears to lie some distance away, and the injury may not be recognized by the patient for some days. Suture during the healing period should be avoided, being unsafe and unlikely to give a good functional result. If the case is not seen within twenty-four hours it is best to wait till the wound has healed and then to explore in a clean field, find the severed ends, and suture them. Suture of the extensor tendons in the fingers is nearly always a success; suture of the flexor tendons is nearly always a failure because of the great likelihood of adhesions in the rigid tube of the theca. Cut flexor tendons must nevertheless be repaired, and the theca must be opened to reach them by an incision along its side, as has been taught in the drainage of sheath infections. The tendon should be sutured with the finest intestinal catgut, and voluntary movements of the gentlest type encouraged from the first day. A gloomy prognosis will prepare the patient for the probable result, but allow jubilation over the rare success.

### Cut Nerves

Nerve injuries due to wounds are rarely met with in civil practice except in cuts of the wrist, where the median or ulnar nerve, or both, are very often severed. As with tendon injuries, the existence of a nerve lesion should be established by the preliminary clinical investigation and not found accidentally. If the ulnar nerve is known to be

divided it may be accepted that the ulnar vessels are also cut, and these should be isolated and ligatured at both ends before the nerve is approached. Nerve suture depends for its success on there being a minimum amount of scar tissue across the suture line. The two ends must be healthy, and must be approximated by interrupted sutures which pick up only the perineurium, and which bring the two ends together without rotation, without separation, yet without compression. The line of suture must not be involved in any neighbouring repair, or in the reaction to infection.

If the ends of the nerve are seen to be clean-cut and if the surrounding injury is slight, repair may be carried out at once. The cut surfaces, if at all ragged, may be trimmed by a single cut of a sharp razor blade on a cork laid under them, but any wide clearing or resection should not be attempted. After this trimming four interrupted sutures of the finest intestinal catgut are passed through the sheath alone at the four quadrants, and pulled so as to approximate the ends very accurately before they are tied and cut. After the nerve has been thus repaired the line of suture should be shut off from any area of adjacent repair by stitching a flap of healthy tissue around it before the wound is closed. When there is much laceration, when repair is undertaken after twelve hours, or when the wound is in any way infected, the injured nerve should be left untouched, to be repaired later by secondary suture when other structures have soundly healed.

### Wounds in the Neighbourhood of Joints

Penetrating wounds of joints demand consideration in a separate article. Very often, however, a wound is seen to be near a joint, but it is uncertain whether actual penetration has or has not taken place. In such cases the operator should hope for the best and prepare for the worst. It is unwise to explore with a probe; a non-penetrating wound may be turned into a penetrating one, and infection may be carried through a small tear that might otherwise have sealed off. The wisest course is to clean thoroughly the more superficial layers, to close the wound partially (leaving a drain or pack down to that part which lies nearest the joint cavity), and to immobilize the whole limb. If after a week there is no reaction in the joint, movements may safely be started.

### Wounds Caused by Indelible Pencil Lead

These wounds are sufficiently common and sufficiently serious to demand attention. Indelible pencils are beloved of school children. The leads are large and brittle, and may be broken off accidentally by a child in falling on the point, or intentionally by one in need of pellets for an air gun. The wound is usually a small punctured one which emits a copious purple discharge, often for weeks at a time. The dye is toxic, and may even give rise to constitutional symptoms due to absorption. Locally it is taken up by phagocytic cells, which form a granulomatous mass that persists till the last of the dye is eventually discharged or the whole area is extruded as a slough. These small wounds should be excised as soon as their nature is recognized.

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The November issue of the *Bulletin de l'Office International d'Hygiène Publique* includes articles on typhus in Egypt, India, and Rumania, Weil's disease in the United States, paralysis following anti-rabic treatment, progress made in the quarantine services in the United States, and the work on nutrition in India.

# INTERNATIONAL HEALTH

## SURVEY BY THE PERMANENT COMMITTEE

The report of the medical director of the International Health Office of the proceedings at the session of the Permanent Committee in October, 1937, has now been issued.[1]

### Aircraft and Yellow Fever

New accessions to the International Sanitary Convention for Aerial Navigation of 1933 were reported from the Republic of Liberia and several British protectorates and possessions. A general list of the notifications under the various categories of aerodromes envisaged by the Convention has been published by the Office and will be revised from time to time. A detailed survey of such aerodromes in the French colonies was submitted and an account was received of the organization and measures adopted in the United States against yellow fever. Further information was received on the degree of infestation of African countries by mosquito vectors of yellow fever and observations were communicated on the insect content of aircraft arriving at Khartum. The new form of the journey log book has been adopted by the International Commission for Air Navigation and will be put into force from June 1, 1938.

On certain specific questions submitted to the committee decisions were reached as follows:

(*a*) Measures to be taken under the Convention against yellow fever must be applied to all passengers using an international line, including those who do not leave the limits of one territory. The possible risk is no doubt small, but in certain regions it must be kept in mind.

(*b*) Article 38 may be considered as being complied with by the establishment, in areas in which the risk of infection by the yellow fever virus exists, of refuelling aerodromes to be used for short stops only, during daylight, even if such aerodromes do not possess screened buildings for the passengers and crew; no passengers must embark from them and they must not be used for any other purpose than refuelling. (The delegate from British India expressed his reserves on this point.)

(*c*) Hospitals in the near neighbourhood of aerodromes may be permitted to take the place of special buildings for passengers required under Article 38 (*d*) of the Convention.

(*d*) An area can only be officially considered infected or suspected if yellow fever has been diagnosed and notified in it (the delegates from British India and the Dutch East Indies expressed their reserves on this point); such a notification relating to one area must not be considered as rendering the whole country infected.

In the course of the first nine months of 1937 yellow fever has been rather more frequent in Africa than in the immediately preceding periods.

Small epidemics at Accra and Mepom (Gold Coast) occurred, and single cases were notified at Brazzaville and Bangui in French Equatorial Africa, both of which are areas in which yellow fever had not previously existed. In South America yellow fever was notified from Colombia and from Peru—the latter being the first notification for a long time—as well as from the States of Matto Grosso, Minas Geraes, and Sao Paulo in Brazil. In the Anglo-Egyptian Sudan fresh work has confirmed the high proportion of sera positive to the mouse protection test, the proportion reaching 70 to 80 per cent. in the region of the Nuba mountains. It would seem that yellow fever existed there in 1936, in the neighbourhood of Kau; a large number of sera of children under 10 years old were positive in 1937, while in 1935 all sera of children of the same age were negative. That of a European doctor who had lived in the area in 1936 was negative before

[1] Paris: Office International d'Hygiène Publique, 195, Boulevard Saint-Germain.

and positive after his stay; in the interval between these two examinations he had had a slight attack of fever lasting four to five days.

Virus attenuated by tissue culture, without the addition of immune serum, has been used with success in England on more than 600 persons with no serious reactions. In North and South America the Rockefeller Foundation uses a virus grown on tissue from chick embryos from which the head and spinal cord have been removed. This has been used without immune serum on more than six thousand persons with a proportion of 5 to 8 per cent. of slight reactions on the sixth or seventh day after vaccination. Two to six months after vaccination fifty-one out of 2,200 persons vaccinated by various methods showed jaundice.

### Typhus Fever

Although fairly frequent in Czechoslovakia between 1920 and 1923, typhus has now practically disappeared from that country, except in the mountainous region of the north of Russian Sub-Carpathia, into which it is thought to be introduced from Poland by smugglers. The local population is comparatively immune, but persons coming from other parts of Czechoslovakia are much more severely attacked. Weigl's vaccine has been used since 1934 for persons particularly exposed to infection; no case of the disease has occurred up to date in 740 persons vaccinated.

In the United States louse-borne typhus does not seem to occur, but 1,662 cases of murine typhus transmitted by fleas were notified in 1936, the majority being from the States of Georgia, Texas, and Alabama.

In Morocco three serious outbreaks occurred following the bad harvest of 1936—near Marrakesh, at Fez, and at Casablanca. Blanc's living vaccine attenuated with bile was used to inoculate the great majority of the natives in the threatened areas; 44,655, 2,962, and 146,283 persons were vaccinated in the above three areas respectively. This mass vaccination was followed by a sudden fall in the epidemic curve, even although no other prophylactic measures such as delousing were employed. According to carefully controlled mass observations the total percentage of reactions was 0.61 among the natives and 13 among Europeans.

In Tunisia endemic typhus has persisted in a few areas and broke out between November, 1936, and June, 1937, with unusual virulence. The results of the classic methods of prophylaxis having therefore been judged insufficient, it was decided to employ, in addition to isolation of infected persons and delousing, vaccination with Laigret's vaccine (living murine virus incorporated in egg yolk); this can be dried and suspended in oil at the time of inoculation, and can therefore be sent considerable distances and used by doctors on the spot. In Tunisia 3,601 vaccinations were carried out in 1935–6, 27,941 in 1936–7, and it is hoped to raise the figure to 150,000 for 1937–8. Thirty-two cases of typhus with no deaths occurred in vaccinated subjects, but twenty-seven of these fell ill during the first fortnight after inoculation. The incidence of typhus in the months following inoculation was 0.9 per 1,000 in the vaccinated and 11 per 1,000 in the non-vaccinated of the same communities. Three cases of murine typhus, with a rash but of an ambulatory type, were produced by vaccination.

### Post-vaccinal Encephalitis

As regards post-vaccinal encephalitis in various countries, five cases occurred in Great Britain in 1936 and three cases in the first eight months of 1937; five of these eight were fatal. Four of the cases were in young infants, the remainder were primary vaccinations in children of 10 to 15 years. In Germany five cases were confirmed in 1936, two in children of 3 months and 1 year, the remainder in children of 3 and 4 years old. In Italy five cases occurred in 1936 and six in 1937 out of 1,104,520 primary vaccinations and 1,205,971 revaccinations in 1936 and the spring of 1937. All the cases followed primary vaccinations, and six occurred in children of 10 to 13 months, while five were in children of 2 to 8 years. In Sweden, during the period 1924–36, fifty-four cases were notified (forty-three primary vaccinations and eleven revaccinations), of which eleven occurred in the last four years. No case was noted in the first year of life, six were in children of 1 to 2 years. The highest proportion of cases to vaccinations appears to occur in the age period 5 to 10 years. Cases are scattered throughout the country and their frequency does not appear to be influenced by epidemics of poliomyelitis.

### Other Infectious Diseases

*Tuberculosis.*—Communications on mortality from tuberculosis in rural areas as compared with urban, with special reference to females, were received from Germany, Denmark, the United States, Great Britain, France, Italy, and Jugoslavia. Measures in force with the object of preventing tuberculous infection of school children by teachers and by one another were communicated by the delegates of nine countries.

*Poliomyelitis.*—Studies of several epidemics of poliomyelitis in Sweden have thrown considerable light on its epidemiology. The disease appears in several areas of a district at the same time, and may be presumed therefore to depend on some external factor. Rainfall or thaws seem to occur some ten to twenty days before each outbreak, and cases appear first in the country and then spread to the towns, possibly through unpasteurized milk. Cases of reinfection have been noted and specific immunity does not appear to be important. In Italy, on the other hand, multiple cases in families or schools are practically never observed, nor is there a relation to the rainfall. In Switzerland, as compared with an average annual incidence of 300, 1,269 cases occurred in 1936 and 1,088 in the first ten months of 1937. Family cases are very rare but occur more frequently as an epidemic progresses.

*Scarlet Fever.*—In the United States scarlet fever continues to be mild in character. The case incidence is 200 per 100,000 population and the death rate is about 1 per cent. Active immunization with Dick toxin makes little progress, except among those specially exposed to risk, such as nurses.

*Bacillary Dysentery.*—In the Netherlands Shiga-Kruse bacillary dysentery has disappeared since the beginning of the century, but small epidemics are fairly frequently observed due to Flexner's or the Y bacillus, and particularly from Sonne's bacillus. Cases are mild, but deaths may occur in children and old persons. The principal prophylactic measure is the discovery and elimination of carriers among food handlers.

*Rabies.*—Work at the Pasteur Institute of Tangier goes to explain why vaccine prepared by the method of Högyès has caused more frequent and severe paralytic accidents than other antirabic vaccines. It has been shown that the virulence even of a fixed virus increases very greatly by repeated passage through rabbit spinal cord. Högyès's original dilution was 1 in 10,000, but a dilution of 1 in 900,000 may be fatal.

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L. M. Davidoff and C. G. Dyke (*Amer. J. Ophthal.*, September, 1937) describe a syndrome comprising increased cerebrospinal fluid pressure, headache, marked papilloedema, and failing vision, but seldom vomiting. It is often associated with otitis media. The encephalograms are normal, the cerebrospinal fluid clear, and there are usually no abnormal neurological signs. The patients are mostly under 30 years of age, the duration of symptoms being under two years. Some of the fifteen cases they record showed slight signs of involvement of the pyramidal tract. Dehydration treatment was used in the majority of the cases with good results.

# PRAECORDIAL LEADS IN ELECTRO-CARDIOGRAPHY

## A JOINT MEMORANDUM

*At the request of the Council of the Cardiac Society of Great Britain and Ireland we print below a Memorandum on Praecordial Leads in Electrocardiography. Many different positions have been used for the electrodes in obtaining these electrocardiograms, and much confusion has arisen from the different methods in use. As it has been possible for the Cardiac Society of Great Britain and Ireland and the American Heart Association to reach agreement it is hoped that these joint recommendations will be useful, both to those working at the subject and to all others who are interested.*

### Recommendations for Standardization

In the last few years electrocardiographic leads in which an electrode placed upon the praecordia is paired with an electrode in contact with some part of the body distant from the heart have come into widespread use. The confusion which has resulted from the lack of uniformity and precision in the technique and nomenclature employed by different observers in connexion with leads of this kind has led to an almost universal desire that a standard practice be established. To this end the Cardiac Society of Great Britain and Ireland and the American Heart Association have each appointed a committee to consider this matter and make recommendations. The two committees have conferred and have agreed jointly to make recommendations with reference to the routine use of a single praecordial lead. It is understood that either committee may make additional reports with reference to multiple praecordial leads and other matters not dealt with in the present report.

1. It is recommended that those who employ a single praecordial lead place the praecordial electrode upon the extreme outer border of the apex beat, as determined by palpation. If the apex beat cannot be located satisfactorily by palpation the electrode may be placed in the fifth intercostal space just outside the left border of cardiac dullness, or just outside the left mid-clavicular line if percussion of the heart is unsatisfactory. Where praecordial leads are taken by a technical assistant, the position for the praecordial electrode should be marked on the chest by the physician.

2. It is recommended that a single praecordial lead in which the praecordial electrode has the location specified in the preceding paragraph be known as lead IV B when this electrode is paired with an electrode in the left interscapular region; lead IV R when it is paired with an electrode on the right arm; lead IV L when it is paired with an electrode on the left arm; lead IV F when it is paired with an electrode on the left leg; and lead IV T when it is paired with a central terminal connected through equal resistances of 5,000 or more ohms to electrodes on each of the three extremities mentioned.

*It is suggested that for all ordinary purposes lead IV R or lead IV F be employed. The latter lead should have the preference until it has been established that the former, which is somewhat more convenient, is equivalent to the latter for all practical purposes, or yields results of equal value.*

3. It is recommended that in taking the praecordial leads specified the galvanometer connexions be made in such a way that relative positivity of the apical electrode is represented in the finished curve by an upward deflection (a deflection above the iso-potential level) and relative negativity of the apical electrode by a downward deflection. It is urged that this convention be adhered to in the case of praecordial leads other than those specified, and also in the case of all leads in which one electrode is placed much closer to the heart than the other. In other words, it shall be the standard convention in taking such leads to make the galvanometer connexions in such a way that relative positivity of the electrode nearer the heart is represented by an upward deflection.

4. It is recommended that with the galvanometer connexions made as described in the preceding paragraph the deflections of praecordial leads be designated by the symbols P, Q, R, S, and T, and that in the application of these symbols the same conventions be employed as in the case of the standard limb leads.

5. It is recommended that in taking praecordial leads the electrocardiograph be so adjusted that a deflection of 1 cm. in the finished record corresponds to a potential difference of one millivolt, as in the case of the standard limb leads. Any reduction in sensitivity made necessary by very large deflections should be clearly indicated on the curve, preferably by photographing the effect of introducing a potential difference of 1 mv. into the galvanometer circuit.

6. It is recommended that the greatest dimension of the apical electrode employed in taking the leads specified in this report be 3 cm. or less. A circular electrode between 2 cm. and 3 cm. in diameter should ordinarily be employed.

7. It is recommended that the terms lead IV (R, F, etc.), apical lead, apex-leg lead, etc., be used henceforth only in connexion with the leads specified in this report.

The above recommendations have been drawn up by the following two committees, working in co-operation:

*Committee of the Cardiac Society of Great Britain and Ireland*

D. Evan Bedford (London)
John Cowan (Glasgow)
A. N. Drury (Cambridge)
I. G. W. Hill (Edinburgh)
John Parkinson (London)
P. H. Wood (London)

*Committee of the American Heart Association*

Arlie R. Barnes (Rochester)
Harold E. B. Pardee (New York)
Paul D. White (Boston)
Frank N. Wilson (Ann Arbor)
Charles C. Wolferth (Philadelphia)

These joint recommendations have been approved by the Council of the Cardiac Society and by the American Heart Association, who now authorize their publication. The following addendum to the joint report has been made by the Cardiac Society.

### Addendum by Cardiac Society

1. The above report deals with the nomenclature and technique for obtaining a single praecordial lead suitable for routine clinical work. The committee of the Cardiac Society had insufficient evidence available to permit their making recommendations in respect of multiple praecordial leads. The American Heart Association will, however, draw up such recommendations, and, when published, copies of these will be available for those specially interested on application to the secretary of the Cardiac Society (Dr. Maurice Campbell, 25, Upper Wimpole Street, London, W.1).

2. In using either of the two standard praecordial leads —for example, lead IV R or lead IV F—the correct polarity (paragraph 3) is obtained as follows. The lead switch is turned to lead I. The L.A. terminal is connected to the praecordial electrode. The R.A. terminal is connected to the distant electrode—for example, to the right arm for lead IV R, or to the left leg for lead IV F.

# CAIRO OPHTHALMOLOGICAL CONGRESS

[FROM A CORRESPONDENT]

The fifteenth International Ophthalmological Congress was held in Cairo from December 8 to 14, 1937. The two main subjects discussed were hypertension and retinal arteriosclerosis, and endocrinology and its relation to the eye.

## Retinal Arterial Hypertension

Dr. H. P. Wagener and Dr. Norman M. Keith (the Mayo Clinic), Dr. Bailliart (Paris), and Dr. Y. Koyanagi (Japan) read the opening papers on the subject of retinal arterial hypertension.

The ophthalmologist, because of the wider and more intimate knowledge of the clinical details of retinal pathology, should be better equipped than the physician to observe the reactions in the retina which are associated with an elevation of blood pressure and systemic vascular disease. If it can be assumed, as seems logical, that the visible reactions in the retinal vessels are similar, though at times disproportionate, to the invisible reactions taking place in vessels of similar size throughout the body, then an explanation of the mechanism of these reactions in the retina will go far toward solving the mechanism of diffuse vascular disease. The responsibility of the ophthalmologist in the solution of this problem is great and his opportunities are wide, for he is able to see these vascular changes from their inception and to study their modes of origin and progression.

Evidence accumulated in the fields of physiology, pathology, and clinical investigation indicates that arterial hypertension is an expression of a diffuse disease or abnormal condition of the arterioles throughout the body. The lesion of the arterioles results in an increase in the peripheral resistance in certain regions or in the whole of the arteriolar bed. The narrowing of the lumen of the arterioles, which is the apparent cause of the increased resistance, is not structural in the earliest phases of the disease. It must be regarded as due to increased tonicity of the vessel wall, to spastic constriction, or to a combination of the two. Whether the tonic or spastic constriction is due to the action of a pressor substance directly on the arteriolar wall or through the medium of the sympathetic nerves, or simply to increased vasomotor stimuli, is not known. If the causative factor of the arteriolar narrowing continues to operate, histologic changes develop ultimately in various parts of the arteriolar system—for example, in the peripheral muscles, the heart, the kidney, the brain, and the retina.

## Classification of Essential Hypertension

Both these factors—functional narrowing of and structural wall changes in arterioles—appear to be present in the usual case of diffuse arteriolar disease of the so-called "essential hypertension" type. On the basis largely of the dominance of one or the other of these factors in a particular case, it is possible to classify cases of "essential" hypertension into various groups, in each of which the probable course of the disease and the life expectancy of the individual patient can be foretold with a reasonable degree of accuracy.

Dumas divided essential hypertension into three phases. In the first or silent phase the patient is essentially symptomless. In the second or established phase the disease has become organic and visceral lesions are present. Cerebral haemorrhages, cardiac failure, or uraemia may terminate this phase. It is possible, however, for the hypertension to pass into the third or involutional phase, in which the blood pressure drops and arteriosclerosis dominates the picture—the hypotensive stage of hypertension. According to Bonamour the retinal changes in Dumas's first phase are spastic in type. The blood pressure in the central artery of the retina is likely to be elevated disproportionately to the blood pressure in the brachial arteries. Patients may complain of transient loss of vision. Post-spastic thrombosis of the central artery may result in permanent loss of vision. In the second or established phase retinitis develops in cases which are running a rapidly progressive course. If the disease progresses more slowly sclerosis develops in the retinal arteries as a defence reaction. In the third or involutional phase the sclerosis in the retinal arteries is likely to be quite marked, and lesions such as arteriosclerotic retinitis and retinitis circinata are characteristic. In Bonamour's opinion retinitis of the hypertensive type is essentially vasospastic in origin. As a result of arteriolar constriction reactional dilatation and stasis develop in the capillary bed and serous and haemorrhagic transudations take place into the retina.

## Albuminuric Retinitis

The problem of the pathogenesis of "albuminuric retinitis" has been a consuming one almost since the beginnings of our knowledge of albuminuria as an expression of disease of the kidneys. Bright himself recognized that loss of vision was a symptom in cases of certain patients with albuminuria. Most physicians at present agree that a retinitis of "albuminuric type" can occur in cases in which no evidence of renal insufficiency can be demonstrated clinically, and in which, at necropsy, the kidneys show no evidence of primary nephritis. The most logical explanation of the mode of origin of "albuminuric retinitis" seems to be that of Volhard, who regarded both the arteriolar sclerosis of Verwey and the retinitis as a result of ischaemia due to spasm of the larger arterioles. Volhard's conception of ischaemic or angiospastic retinitis seems to be more generally applicable than any other to the retinal complications of hypertension and nephritis, and to permit of more ready comparison of these complications with the other features of the systemic disease.

Wagener and Keith reported in 1928 on a condition which they termed "the malignant hypertension syndrome." The objective findings are persistently elevated blood pressure, diffuseness of arterial and arteriolar thickening through the body, minimal changes in the renal parenchyma, and retinal changes. The important retinal alterations are the marked spastic and organic narrowing of the arterioles, with diffuse retinitis and oedema of the disks. The characteristic symptoms are nervousness, asthenia, visual disturbances, and dyspnoea on exertion. All observers are agreed that the patients of this group are in a very serious condition. A follow-up of 146 cases showed that 80 per cent. of them died within one year.

Dr. Bailliart, dealing with the clinical part of retinal arterial hypertension, stressed the value of his dynamometer, which estimates the diastolic blood pressure in the retinal arterioles, which is about 40 per cent. of the diastolic pressure in the brachial arteries. The pressures as measured by this method furnish a ready and probably fairly reliable method of determining variations from the normal in pathologic states.

## Endocrinology in Relation to the Eye

The discussion on endocrinology and its relation to the eye was opened by Dr. Snapper (Holland), Dr. von Szily (Germany), Dr. von J. Imre (Hungary), Drs. Jeandelize and Drouet (France), and Dr. Le Cascio (Italy).

Recent investigations have shown that various disorders of the sexual glands are associated with pathological changes occurring in the eyes. Periodic haemorrhages of the subconjunctival tissue, recurring conjunctival inflammations, or especially phlyctenular kerato-conjunctivitis are not rarely found in close relation to menstruation. Filamentary keratitis following atrophy of the lachrymal glands and often combined with arthritic processes as a rule develops in women with ovarian disorders or in the beginning of climacteric.

Keratoconus has been shown in many instances to be a manifestation of disorders of endocrine glands (thyroid and gonads). Von Imre is of opinion that there is a close connexion between acute and chronic glaucoma and abnormal folliculin production. The folliculin production of four glaucomatous patients, examined by reliable biological methods, proved to be exceedingly low. The production of prolan was in every case normal. He points out that there is an undoubted connexion between the changes of the intraocular tension and the pituitary during pregnancy.

Patients suffering from retinitis pigmentosa are treated nowadays with menformon, and in many cases improvement follows and the progression of the disease is arrested.

### Prevention of Blindness

At the meeting of the International Association for Prevention of Blindness Dr. Bailliart (president) read an introductory address. Mr. A. F. MacCallan (London) discussed the measures adopted in Egypt for the prevention of blindness. The ophthalmic campaign inaugurated in Egypt thirty-four years ago, and especially the establishment of travelling ophthalmic hospitals, has reduced the incidence of blindness among patients attending ophthalmic hospitals by one-third. Dr. F. Park Lewis (New York) discussed the responsibility of the ophthalmologist in the conservation of sight and the prevention of blindness. The prevention of blindness is as worthy of consideration by ophthalmologists as either research or surgical care in affections of the eyes. The blindness that comes from negligence, from ignorance, from indifference, and the crudities of living and its mismanagement is universal.

Dr. Joseph Minton (London) read a paper on prevention of industrial eye injuries. An investigation was carried out by him at the Royal Eye Hospital, London, where over 7,000 patients suffering from industrial eye injuries are attended to every year. The present high numbers are due to (1) non-provision of safety measures by employers, and (2) the attitude of indifference shown by workmen to the risks entailed in their work and their negligence in using preventive measures supplied to them. Following his investigation he has organized at the out-patient rooms of the Royal Eye Hospital a museum of preventive measures. The patients have thus an opportunity of studying the preventive appliances at the time of attendance at hospital, and thus choosing the most suitable one for their type of work. If other hospitals situated in industrial areas would take an interest in preventive work a diminution of eye injuries and, with it, of resultant total or partial blindness would follow.

Mr. Lewis H. Carris (U.S.A.) read a paper on the role of the social worker in a campaign for the prevention of blindness. Educationists, public health officials, nurses, industrialists, sanitary engineers, social workers, and all in any way concerned in human welfare must take their rightful place in the attack upon this social enemy. To the world at large we must teach the causes of blindness and defective vision, the place of nutrition and hygiene in relation to eye health, methods of safeguarding the eye against injury and harm and of keeping it in a state of greatest possible usefulness.

The Congress was attended by 600 delegates from all countries. On December 9 they were entertained at the Royal Palace by King Farouk. Visits were arranged to the hospitals in Cairo, and excursions to museums and places of interest. The next international congress will be held in Vienna in 1941.

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The Diabetes Society of New York has issued a card for diabetics to take about with them containing the patient's name and telephone number, and stating that he has been treated with insulin, and that on loss of consciousness he should at once be injected with glucose solution.

## CROYDON TYPHOID INQUIRY

### FINAL SPEECHES

The Croydon Typhoid Inquiry, which had been expected to end on January 11, the tribunal sitting late for the purpose, had to hold a further meeting on the following day to enable Sir Walter Monckton, K.C., to conclude his speech on behalf of Croydon Corporation. His final address to the tribunal consisted largely of a defence of the water department and the borough engineer, but he also dealt with certain complaints as to "slowness" which had been made against the medical officer of health.

Sir Walter Monckton reminded the tribunal that on November 1 the medical practitioners in the neighbourhood where the first few cases had occurred were notified to look out for typhoid. In the course of his cross-examination Sir William Willcox had agreed with him that, so far as it went—though he thought it had not sufficient life in it—that was an adequate notification to put them on their guard about the existence of typhoid in the district. It was necessary to secure two things: first to put the doctors on their guard, and secondly, to prevent premature publication of something which ought not to have been published because it would create a scare or panic. If medical practitioners knew that there was a case or two of typhoid in the district where they practised they would suspect each case of illness of being a typhoid case until they were satisfied that it was not, and therefore the notification by the medical officer of health was all that was required. It was true that one could not draw a line and say that within a particular area every doctor should be notified; nevertheless, all the doctors practising in the particular district were notified on November 1, and on November 4 all the doctors in Croydon were notified. It was quite plain that any method of the kind was subject to criticism, because it must leave out of account some doctors who would be coming into the area, but when the 150 or more doctors who actually practised in Croydon received the notification it was to be presumed that their colleagues who came in from outside would hear of it. The advantage of notifying the doctors was not only that they were the people who saw the illness at its beginning, but they were the only people who could be trusted to pass on the information in a way which would not cause uninstructed alarm. A doctor could pass on explanations to his patients and their families, while public notification might lead to misunderstanding and panic.

With regard to the cause of the outbreak, Sir Walter Monckton submitted that it was still impossible to put the finger with any confidence upon a particular cause. The possibility of an unidentified carrier and of pollution being received in some way from the gathering ground could not be excluded. Sir William Willcox had taken the view that the gathering ground was the most probable source, but Sir William had not in mind the fact, which was assumed by all the rest of those concerned in the Inquiry, that for a period there was a carrier actually at work in the well, and he might to some extent have modified his view if he had had that fact present in his mind. Among the many people who were on the gathering ground it had not been possible to investigate far enough to rule out a potential source of infection there. Looking at the gathering ground as a possible source, one's mind turned first to the latrine trench that was dug thirty-five yards from an adit. It had not been possible to identify all the workmen—100 or more—who were engaged there from May to November, and to eliminate the possibility of carriers. Steps had been taken to examine some, and so far as the investigations went they were negative.

In conclusion he suggested how easy it was to be wise after the event. It was scarcely possible to help applying to things as they had turned out to be a standard which

it might not have occurred to one to apply had one been faced with the conditions at the time. In expressing gratitude for the patience and courtesy with which the tribunal had listened to the arguments, he said with what kindness the assessors (Sir Humphry Rolleston and Mr. Gourley) "have watched us sail our frail barque into what to them are territorial waters, but to us uncharted seas, and have observed our misfortunes with ready sympathy and kindly smiles."

Mr. H. L. Murphy, the chairman of the tribunal, said that he would endeavour to get out his report without undue delay. He added:

"We have been debating a subject upon which feelings have been very strong on both sides, and we have been here for seventeen days debating it in an atmosphere, I think I may say, of complete tranquillity, for hardly has there ever been the necessity for even a request for silence. I think that is a tremendous tribute to the orderliness and sense of fair play of the people of Croydon, and I wish to thank them very much for it."

In the course of the Inquiry about 8,000 questions were asked of witnesses, and the shorthand record extends to over 1,000 printed pages.

## PSYCHIATRIC RESEARCH BUREAU

Thanks to the generous assistance of the Rockefeller Foundation a bureau for the assistance of research workers in psychiatry has been established under the auspices of the Royal Medico-Psychological Association. The committee of the Research Bureau consists of Sir Hubert Bond, Dr. J. Brander, Dr. W. T. Fleming, Professor F. L. Golla, Dr. P. K. McCowan, Dr. W. D. Nicol, Dr. G. W. Smith, and Dr. R. M. Stewart.

### Aims and Methods

The objects of the Bureau are the following:

1. Any psychiatrist who wishes for special information as to what is at present known on any subject of interest to himself is invited to notify the Secretary of the Bureau. A bibliography of all recent papers relating to the subject will be sent to him, together with abstracts of such communications as may seem of great importance, and should he then desire abstracts of any particular papers, especially those published in foreign languages, they will be made for him on demand.

2. Any worker who wishes to start some particular research may on application obtain information as to what has already been done on the subject, and what methods of procedure are advised for further work.

3. Any worker who desires further elucidation on points of technique will be either advised directly from the Bureau or put into direct communication with the appropriate members of a panel of experts who have kindly consented to advise on technical questions.

4. Workers desiring the loan of technical manuals for purposes of their work may obtain them on application.

5. Workers desiring to see personally the application of methods of research or treatment or to confer personally with expert advisers will be eligible to receive small grants to enable them to do so. These grants, which will be made by the committee, are intended to cover the expense of visits of a few days to laboratories at home or abroad, and are primarily for the use of medical officers who might be unable to make such visits at their own expense.

6. A short account of recent advances in subjects of particular interest together with a fairly complete bibliography will be issued at intervals and sent to any psychiatrist who may signify a desire to receive it.

7. Psychiatrists who would like to be put into communication with other workers abroad can receive help from the Bureau.

8. Although it is very much hoped that all British psychiatrists will be members of the R.M.P.A., the services of the Bureau and the eligibility for grants is open to any psychiatrist working in the British Empire.

All communications should be addressed to Research Bureau, the Royal Medico-Psychological Association, 11, Chandos Street, Cavendish Square, London, W.1.

## ROYAL MEDICAL BENEVOLENT FUND

At a recent meeting of the committee eight annuities were awarded. Forty-five grants were voted to beneficiaries, amounting to £1,204. Among thirteen new applicants the following particulars are given of two cases:

M.R.C.S., aged 70, married; wife aged 58. Invalided out of the Royal Air Force with glaucoma in 1926, he has not been in practice since, but has been able to earn a very small and precarious living by writing. This source of income is ended owing to blindness and through exhaustion of the subject. His wife has had several attacks of cholecystitis due to gall-stones, and may have to be operated on in the near future. Private income *nil*. The Fund voted £100.

Daughter, aged 60, of F.R.C.S. For twenty-nine years she has worked as a matron at two private schools, but had to give up her work in 1933 owing to phlebitis and varicose veins. She has been living on her savings, which are now reduced to £30. She has no relations who can help her. The Fund voted £36, and is obtaining assistance from other charities for this most deserving case.

Subscriptions and donations are urgently needed. Cheques may be made payable to the Honorary Treasurer, Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, London, W.1.

E. Mowinckel, H. Hansen-Reistrup, and P. J. Reiter (*Hospitalstidende*, September 7, 1937) have sought clinical evidence of vitamin deficiencies in the patients treated in a large Danish mental hospital whose diet they have scrutinized with special reference to its vitamin content. The test for vitamin A deficiency was that devised by Edmund for the detection of hemeralopia, and consisted in the measurement of the patient's reaction to light in a darkened room. The degree of intelligent co-operation required for the satisfactory performance of this test entailed the elimination of many of the patients, but 260 were found suitable. Among them were twenty-one with definite and sixty-eight with doubtful visual signs of vitamin A deficiency. A search for vitamin $B_1$ deficiency in the form of polyneuritis, other than alcoholic polyneuritis, revealed only one case, and that was merely a suspect case. Evidence of vitamin $B_2$ deficiency leading to pellagra was found in several patients, particularly among the subjects of schizophrenia and those suffering from severe chronic disturbances of the digestive system. The changes observed were partly cutaneous, partly neuritic (central neuritis). The ascorbic acid test for vitamin C deficiency not being available when these studies were started some three years ago, the authors relied on the Bexelius capillary resistance test for the demonstration of vitamin C deficiency, for which 548 patients were examined. In 6.5 per cent. of them vitamin C deficiency was thus demonstrated. Among the patients found to be suffering from it were eleven with well-defined stomatitis. The incidence of various forms of vitamin deficiency was highest among the schizophrenics, who represented 60 per cent. of the hospital's inmates. The authors conclude that though they have failed to demonstrate any marked vitamin deficiency either in the patients or their diet, the amount of vitamins A, B, and C in the diet is dangerously low. This is the more deplorable as a shortage of vitamins may in some cases profoundly influence the mental condition of the insane.

# Reports of Societies

## NUTRITIONAL THERAPY DURING PREGNANCY

At a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on January 11 a discussion took place on nutritional therapy during pregnancy. Dr. J. W. TREVAN was in the chair.

### Analysis of Diets taken by Pregnant Women

Dr. R. A. MCCANCE of the Biochemical Department, King's College Hospital, said that the results he had to communicate were reported very briefly to the British Medical Association Meeting at Belfast in July last, but the work had been considerably extended since then. The subjects of the investigation were 116 pregnant women with varying incomes, who weighed all the food they ate for one week. He believed this was the first investigation of the kind made in this or any other country, but those concerned took no credit for that, because it was an investigation which should have been made years ago in any country interested in the well-being of its citizens. The better-class women were not all visited personally, but the poorer women were visited every day, any records which were suspect were thrown out, and it was believed that these 116 women carried out their part in the investigation correctly enough to provide records of real value. The composition of the diets was calculated from food analyses made at King's College Hospital. The heights and weights of the women were measured, and the amount of haemoglobin in the blood was estimated (by Haldane's method) in seventy-seven of them. About fifty of the women were the wives of unemployed miners in South Wales and Durham, and the others belonged to three groups of rather more than twenty, each consisting respectively of the wives of employed labourers in Bermondsey, the wives of better-off artisans in Camberwell, and women of the professional classes. The results were shown in the following table:

| Income (Less Rent) per Head per Week | No. in Group | Haemoglobin % | Calories per Day. | Total Proteins gms. p.d. | Animal Proteins gms. p.d. | Calcium gms. p.d. | Phosphorus gms. p.d. | Iron mgms. p.d. |
|---|---|---|---|---|---|---|---|---|
| Less than 6s. | 16 | 76 | 2,211 | 60 | 28 | 0.51 | 0.80 | 8 |
| 6s. to 9s. .. | 23 | 79 | 2,158 | 64 | 36 | 0.53 | 0.92 | 10 |
| 9s. to 15s. .. | 19 | 80 | 2,194 | 66 | 37 | 0.52 | 0.99 | 12 |
| 15s. to 25s. .. | 14 | 81 | 2,471 | 75 | 36 | 0.75 | 1.22 | 13 |
| 25s. to 40s. .. | 13 | 90 | 2,781 | 86 | 55 | 0.75 | 1.32 | 14 |
| Over 40s. .. | 22 | — | 2,517 | 80 | 55 | 0.92 | 1.44 | 14 |

With rising income the intake of milk went up, and would have gone up much more steeply but for the fact that the women in the two poorest groups were being supplied with considerable amounts of milk from the public authorities; this went a long way to explain the increase in calcium. White bread fell as incomes went up, but brown bread stayed level in the first three groups and then went up. Total flour showed a certain falling off with income. The intake of jams and marmalades went up. Eggs rose with income, as did raw fruit, meat, and fish, and green vegetables rose strikingly. It could be said that the investigation had afforded evidence of profound nutritional deficiency in the poorer classes.

The next question as to whether the well-to-do women were perfectly nourished was difficult to answer because of the absence of criteria. On comparing the diets of these professional women with the recommendations of the League of Nations Committee on Nutrition, it appeared that they consumed an average of 2,517 calories a day, whereas the Committee's recommendations were from 3,000 to 3,500, but, in his view, these recommendations were too high. The calcium intake each day, 0.92 gramme, was very much below the League of Nations' recommendation (1.60 grammes), and so was the phosphorus, 1.43 grammes a day, the League's recommendation being 1.90 to 2.60 grammes. It was possible that even women of the professional class were not being nourished during pregnancy in the best possible manner, but well-to-do women with plenty of money to spend on food would find it difficult to consume up to the protective food level suggested by the League of Nations.

As for remedies there appeared to be four possible methods: (1) food education; (2) increased income, or, alternatively, the cheapening of essential foods; (3) communal feeding in some form; and (4) medicinal treatment with mineral or vitamin supplements. Probably a mixture of the four methods would give the best solution.

### Concentrated Food Substances in the Diet

Dr. MARGARET BALFOUR gave a brief account of the work of the National Birthday Trust Fund, organized to help women in the distressed areas. This work began in the Rhondda Valley, where the maternal mortality for the seven years previous to 1935 averaged 7.22 per 1,000 births. The scattered nature of the population made it difficult to organize meals, and as the local authority was already giving milk the Birthday Trust determined to supply dry foods from ante-natal centres. At the end of 1935, the first year of the experiment, there was a reduction in mortality; in 1936 the scheme was extended to other areas in South Wales and to three areas in the north of England, and again the mortality fell. The food given consisted of a certain milk preparation and marmite, and this was continued for twelve weeks, which might be the last twelve weeks of pregnancy or, if the medical officer preferred, the nine weeks before delivery and the three weeks after. Over 10,000 expectant mothers had received the food, and among these the puerperal death rate from sepsis was only 0.09 per 1,000—that is, only one death. In a control series of 18,000 women in the same area who did not receive the food the puerperal death rate from sepsis was 2.91. The maternal deaths from other causes gave rates of 1.54 and 3.24 in the respective groups, and the infant death rate was little more than half in the Birthday Trust group what it was in the control series. The Birthday Trust women were mostly the wives of unemployed men; the mothers in the control group were more often better-class women who received ante-natal care from their own practitioner. It had been suggested that the difference was due to the fact that all the Birthday Trust women received ante-natal care, whereas only a proportion of the others did so. On the other hand, it must be remembered that the women who went to the ante-natal centres were likely to include a larger proportion with some abnormal condition in pregnancy and also a larger number of primiparae.

There was some doubt as to how far the milk foods given were taken by the women themselves, and how far they shared them with their families. The marmite contained very little protein, no carbohydrate or fat, but it was rich in the vitamin B complex, which was a neuromuscular stimulant, and possibly when this preparation was taken in the last months of pregnancy it enabled the woman to deliver herself in certain cases when otherwise she would have had to undergo operative intervention. The vitamin B complex also had a special action on the skin and mucous membrane, and it might be that the action on the mucous membrane of the uterine passages diminished the tendency to puerperal sepsis. A new extract of yeast rich in vitamin B had been prepared, and this was being given instead of marmite in some areas in order to find out whether the beneficial effect of marmite was due to its vitamin B or to some other constituent.

### General Discussion

Dr. J. W. TREVAN commented upon the high total calories recommended by the League of Nations. He was sure that he could not himself consume 3,500 calories a

day. With regard to Dr. Balfour's figures, he wished it had been possible to have controls from the same group, although he admitted the difficulty of having to deprive some women of the protective foods which were given to others. Dr. HELEN MACKAY said that in work like this it would be better to study small groups intensively. The mortality rate would be too small to be helpful, but the morbidity rate might afford a great deal of information. There was no doubt that in children small additions to the diet effected remarkable improvements in the morbidity rate, and if in children why not in adults? Professor JAMES YOUNG said that some of the Birthday Trust figures seemed almost too good to be true. To have only one death from sepsis in 10,000 deliveries almost suggested—though he could not accept the suggestion—that all the obstetric procedures against sepsis might be abandoned, and that it was sufficient to administer a little yeast to secure an adequate resistance. The control group, he imagined, consisted of women who were economically better off. This must mean that the important thing was not the quantity of food, because these better-to-do women presumably had sufficient food, but the difference must depend upon some inherent quality in the diet.

Dr. JANET VAUGHAN said that Dr. McCance's figures had demonstrated again that there was a very high incidence of some degree of anaemia in working-class women during pregnancy. She thought the justification for giving all women during pregnancy medicinal doses of iron should be considered, not only for the sake of the women themselves but for their children. Another point was that marmite had a very important haemopoietic action which was not understood and was probably not associated with any of the vitamin B constituents at present recognized. It might be associated with the vitamin B complex, but was certainly not vitamin $B_1$ or $B_2$. She quarrelled with Dr. Balfour when she said that it was better to give these medicinal remedies than to give a good round meal. In the latter case the women were being provided with a good many other necessities not included in the artificial diets. It did seem rather tragic that this magnificent experiment was being jeopardized by the omnibus type of therapy employed. It would be far wiser to study a few cases, giving them not omnibus treatment but carefully selected remedies.

Mr. A. L. BACHARACH differed from Dr. Vaughan. It was a paradoxical position that Dr. Vaughan, who was a physician, should be advocating what she alleged was an experimental and scientific procedure, while he, as a laboratory worker, was "shocked by her suggestion." He believed that such an experiment would not work. It would be all very well if the women dealt with were experimental animals in the laboratory whose basic diet could be rigorously controlled so as to be adequate in all factors save one, and experiments carried out on that one variable factor. But that was not the position, and there would be a large number of women who were suffering from multiple deficiencies of varying degrees of intensity. The only result of giving to a group of individuals who were suffering from subnutrition in other respects a single factor would be to prevent that single factor from demonstrating its full possible effect. He further said that it had been shown that diets apparently perfect in themselves were capable of very marked improvement by the addition of one or more constituents that had been previously supposed to be present in adequate amounts; no two of these additions when worked out arithmetically on paper had the same effect as when given together in practice. This was a question of integration of effects which could not be demonstrated in theory, but only by carrying out experiments. The work that was being done was of the nature of making the best of a bad job. A number of pregnant women were on a dietary level which was injurious to their health. Additions to the diet would go a long way to modify that position. It was not known exactly what dietary constituents would do this, but they were in a position to say that certain foods and yeast products would do a great deal to bring down mortality and morbidity.

Professor J. R. MARRACK joined in the protest against the medicinal method of making up inadequacies in diet. The people concerned suffered from multiple deficiencies, and if an attempt were made to make up such deficiencies with multiple supplies of elaborate preparations peculiar difficulties would arise. It was much better to make up the deficiencies with ordinary food. Dr. PAYNE asked whether there were any sources other than milk for obtaining calcium. Dr. MCCANCE replied that a large amount of calcium was necessary to the body, and milk was the only food in common use in this country which gave it. It was the most important source of calcium in British diet. Dr. MARGARET BALFOUR said that it might be very much better to give natural rather than artificial food, but this was not easy, partly owing to the economic situation and partly owing to the psychological fact that these poor expectant mothers did not like leaving their homes to go to a centre for a good meal while their husbands and children remained with scanty food at home.

## CARDIAZOL CONVULSION THERAPY IN SCHIZOPHRENIA

At a meeting of the Section of Psychiatry, Royal Society of Medicine, under the presidency of Dr. EDWIN GOODALL, on January 11, a paper on cardiazol convulsion therapy in schizophrenia was read by Dr. L. C. COOK, deputy medical superintendent, Bexley Mental Hospital.

Dr. Cook began with a reference to his visit last summer to Budapest, where the treatment of schizophrenia by induced convulsions was originated by Meduna in 1934. For many years it had been known that any severe shock, whether in the nature of acute physical illness or intense psychological stimulation, occasionally produced dramatic improvement in schizophrenia. The metabolic changes in schizophrenia were unknown, but evidently they were not irreversible, and these shock methods were able sometimes to reverse them. Convulsion therapy was first introduced in the form of intramuscular injections of a camphorated oil solution, but Meduna soon discovered the advantages of intravenous cardiazol (pentamethylene tetrazol), a synthetic water-soluble compound, primarily a cardiac and respiratory stimulant. For convulsion therapy it was convenient to use a 10 per cent. aqueous solution, made up freshly every two or three days, sterilized by autoclaving at 110° C. for twenty minutes, and kept in air-tight rubber-capped bottles. Doses as small as 0.2 gramme might be sufficient to produce a fit, but 0.5 gramme (5 c.cm. of the 10 per cent. solution) was the usual initial dose. The same dose was administered as long as it produced a major fit. When the initial dose failed to produce a convulsion an increase of 0.1 gramme was given at the next injection. In practice a few increases were often necessary during a course. When once the effective dose was reached 85 per cent. of injections should be successful. Dr. Cook never found it necessary to give more than 1.2 grammes as a single dose, but he had immediately followed a subliminal dose of 1.1 grammes with a second injection of 1.2 grammes without any ill effects except slight vomiting. Fits were usually induced every three days; in some cases it might be preferable to give the injections every other day. The length of the course depended upon the subject. When improvement occurred it might be dramatic in its rapidity. When a full remission was considered to have been established it was usual to give at least three further fits to diminish the chance of relapse. In completely unresponsive cases twenty fits should be induced before the treatment was given up.

### The Fit and its After-effects

The fit resembled a severe, spontaneous, generalized epileptic convulsion and showed all the characteristic

phases. The major fit, usually starting ten to thirty seconds after the injection, with a phase of generalized tonus merging into the clonic phase and succeeded by a state of flaccidity, was followed by a short period of coma, and complete consciousness was generally regained in from five to ten minutes. Recovery was sometimes associated with confusion, restlessness, and mild excitement lasting a few minutes, but most patients were quiet and soon dropped off into normal sleep.

If due precautions were taken danger was insignificant. Meduna had treated 400 cases without fatality, and Dr. Cook believed that only three deaths were recorded in upwards of 1,500 cases treated by various workers. At Bexley he and his colleagues had induced over 1,400 major fits without encountering any really alarming features. Respiration might momentarily cease in the flaccid stage, but pressure on the lower ribs immediately restarted it. Transient cyanosis was usual, and might possibly be of therapeutic value. Occasional irregularity of the pulse occurred, but was quite temporary. A thorough physical examination should precede treatment, and all patients suffering from general bodily illness, especially of the heart and lungs, or any form of pyrexia, should be excluded.

Although dangerous or serious sequelae were conspicuously absent, two annoying complications tended to occur. One was local fibrosis of the injected veins, and the other was the distress and fear occasioned. Most patients feared the injections and a few reached a pitiable stage of apprehension. The distress could be lessened by giving an immediate sedative (not an anti-convulsant, such as luminal). It was his habit to give a second and larger dose immediately after an unsuccessful injection, thus reducing to a minimum the period of distress. The question of premedication had been considered, and lately he had been using hyoscine and morphine in combination, with the result that severe apprehension and distress had become a thing of the past. The only method of completely eliminating distress was that of combining insulin and cardiazol therapy and administering cardiazol during insulin coma.

### Estimation of Results

After showing a table giving the collected results of a number of workers, Dr. Cook gave a summary of forty-five cases treated at Bexley. There had been remissions in twenty-four cases and no remissions in twenty-one. Of the twenty-four cases which showed remissions, sixteen showed very good remissions or recovery. In these same twenty-four cases the duration of illness had been over two years in eleven, between one and two years in six, and under one year in seven. Of the twenty-one non-remission cases, fifteen had had a duration of illness of over two years. By "recovery" he meant discharge or awaiting discharge, the patients having lost every schizoid feature. The greatest triumphs had been gained with some of the almost intractable schizophrenics whose illness had lasted more than two years. More trustworthy than statistics were the impressions of experienced clinicians and nurses. The medical staff at Bexley felt no doubt as to the value of the therapy, and the nurses, who were not likely to be carried away by a new treatment, and at first were biased against it because of the distress occasioned, were now enthusiastically in its favour.

Of the early cases of acute onset, the stuporous and confused types were generally agreed to have the best prognosis. Paranoid types were said to offer considerable resistance to cardiazol therapy, but if the case was of recent and rapid onset it was by no means intractable. Less success attended the treatment of early cases of schizophrenic excitement, especially when the predominant affective state was one of elation. This might be partly due to the tendency for cardiazol to produce a mood of euphoria and spurious confidence. When a schizophrenic illness had lasted more than three years complete recovery was extremely rare, yet here again stuporous and vegetative subjects of catatonic type fared best, and Dr. Cook thought it might fairly be claimed that cardiazol fits could always interrupt a state of stupor.

A tendency to relapse was not infrequent in cases of incomplete remission and could easily be counteracted by a few further convulsions. If treatment was interrupted before completion relapse was common. Post-convulsional lucidity with a tendency to relapse within forty-eight hours had been observed in two cases of agitated, resistive stupor. Good results had been obtained in recurrent cases, although they might not have achieved more than a "social" remission—that is, becoming as well as they were before their illness, or at their individual best—over a period of several years.

Finally Dr. Cook touched upon cardiazol in relation to other forms of treatment, in particular insulin. Insulin and cardiazol should be regarded not as rival but as complementary methods of treatment. Their statistical results were similar, but insulin appeared to have a curative predilection for paranoid and excited syndromes, while cardiazol produced its best results in states of confusion, stupor, and distress. In ideal circumstances both methods should be available. The combined method abolished the distress associated with cardiazol, whilst retaining the beneficial effects of regular convulsions. Cardiazol had the advantage of a simple technique, requiring no large or specially trained staff, and of comparative freedom from danger, though the dangers of insulin therapy, on the other hand, were rapidly decreasing as experience of its action accumulated.

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## THE ASTHMA PROBLEM

At a meeting of the Section of Medicine of the Royal Society of Medicine on January 13, with Dr. H. L. TIDY presiding, a discussion took place on certain aspects of the asthma problem.

Dr. FRANCIS M. RACKEMANN (Boston, U.S.A.) said that asthma was most often a symptom of allergy, but there were a number of patients who had asthma which was not allergic in origin. Asthma and hay fever, and possibly eczema, depended upon immediate reactions of the urticarial type. These reactions, which were demonstrated by a skin test, occurred not only in persons said to be allergic but in others said to be normal, and they could be reproduced in animals. In addition to the immediate reaction a delayed inflammatory reaction could also be demonstrated twenty-four or forty-eight hours after the test had been applied. It was possible to correlate the delayed and the immediate reactions and to show that each was a part of the development of immunity. The degree of sensitiveness of asthma subjects was often extreme, and might be multiple. Thus, a baker with wheat asthma reacted not only to wheat but to rye and orris powder. Another factor was inheritance; some 60 per cent. of the individuals who were themselves sensitive stated that their father or grandfather had had similar symptoms.

The symptoms that accompanied asthma were very characteristic. The patients had a low blood pressure, a rapid pulse, and fatigued easily. Sensitivity to a skin test did not necessarily imply sensitivity to the point of producing symptoms. He had tested thirty employees in a bakery, making skin tests with wheat and other substances; seventeen of the men had partial skin sensitiveness to wheat, but only one out of the thirty had any trouble from the inhalation of wheat flour. In hay fever or specific allergic rhinitis the tissues in the nose were sensitive, and a local reaction in the mucous membrane took place on contact with grass pollen. About one-third of such persons had asthma, but the process did not advance by direct extension along the mucous mem-

brane nor by direct inhalation of spores into the lungs. Some patients had abdominal symptoms, which might be due directly to food, but sometimes were more complicated. A few had migraine, in which the cause of the trouble seemed to be either a food or a dust. All these conditions must depend upon local tissue sensitivity, and there was evidence that some organs and tissues were more sensitive than others. There was evidence also that the offending substance could enter the blood, and that helped to explain some of the remote symptoms. Deaths from asthma were uncommon, but a few had been reported. In a patient who had died of suffocation in an acute attack of asthma the lung was found to be studded with plugs of tenacious mucus. A series of hypertrophied and overactive mucous glands was also found in the wall of the bronchus. The real lesion in the lung was the hypertrophy and overactivity of these mucous glands, which continued to pour out a sticky material into the lumen of the bronchus. The mucous plugs would account for all the symptoms. They were not necessarily terminal appearances, but occurred in life, as he illustrated by lipiodograms of the lungs.

### Treatment of Asthma

Professor L. J. WITTS said that the asthma problem was one of the most difficult in medicine. It was possible to desensitize those patients who were skin-sensitive, give vaccines to those who had infection of the bronchi, and in those numerous cases which showed neither of these phenomena various forms of non-specific treatment could be used. He recalled an important paper by Dr. Rackemann, who confessed that he thought he had cured a number of his asthma patients, but later discovered that the cure had not persisted. Some patients who had had one kind of sensitivity came back again with a different kind; to use Dr. Rackemann's expression, the gun had remained loaded though another trigger was now fired. He had found adrenaline and ephedrine useful, and it was worth pointing out that some of the most remarkable advances seen in medicine in recent years had been in respect of drugs which controlled abnormalities of muscle and secretion; he instanced ergotamine in migraine and prostigmin in myasthenia. The search for some general bodily disturbance which accompanied asthma seemed to him the most fundamental method of approach. Few of them believed that psychic causes were the principal ones, though they were impressed by the psychic factor.

### Assessment of Results

Dr. E. R. BOLAND said that opinion differed as to whether medicine had any right to be complacent regarding the treatment of asthma, but the limitations of such treatment should at any rate be recognized. The fact that the assessment of the results of treatment was so difficult was a criticism of the therapeutic achievement. Superficially such assessment should not be difficult. The patient came for treatment, received it, and was better, going away loud in his praises. But if the physician had a sceptical streak doubts might well break through his self-satisfaction at such a result. The patient said that he was better, and by saying so he was better, but was there any objective evidence of real improvement? Such improvement as appeared might be due to chance or to the passage of time or change of season. If a patient really appeared to be cured he sometimes found that he had often been cured before, and if this time he remained cured the fact that allergic conditions not infrequently ceased of their own accord prevented the physician from feeling any real satisfaction. One had to beware of the personal good will of patients, and their anxiety to encourage the doctor by saying that a particular treatment had done them good, when in fact there was no objective evidence of such improvement. From a study of cases in the asthma research unit of which he was in charge he had found it difficult to resist the conclusion that more than half the patients suffering from asthma showed improvement under general medical treatment alone, and if this was taken into consideration, as it must be, in the assessment of the results of specific treatment, much of the improvement which was at present credited to specific methods was not really due to them at all.

### Psychological Factors

Dr. L. S. T. BURRELL thought that the psychological aspect of asthma had not received sufficient attention in the discussion, and he proceeded to describe a few cases in which this aspect seemed to be the important one. He remembered the case of a resident medical officer at a hospital who had an attack of asthma so severe that he was about to take to his bed when a telegram arrived announcing the death of his mother. He immediately got out his car and proceeded to drive the forty miles to her house. He had gone twenty miles when he suddenly remembered that from the time he received the news his asthma had totally disappeared. The recollection brought it on again, and he arrived at his mother's house almost in a state of collapse. Many years ago the speaker had an asthma clinic at Brompton Hospital, mainly for the treatment of children. Twenty years later, when he asked the lady almoner to look out the cases treated in that clinic, it was found that about 70 per cent. of them had "grown out of the asthma." There were patients whose asthma cleared up after an accident, and women who on becoming pregnant lost their asthma. He had in mind the case of one lady who for many years had been under treatment for asthma with no satisfactory result. She was injured in a motor-car accident, breaking several ribs, and from that time onwards she had no return of the trouble. He also mentioned the case of a woman who said she had an attack of asthma whenever she went to Waterloo Station; as she lived at Surbiton she had to go to Waterloo whenever she came to town. A certain amount of bluff was tried in this case. It was mentioned to the lady that some building work was proceeding at Waterloo and that she was no doubt sensitive to the brick dust. An injection of what she was assured was brick dust was administered, and she never had asthma thereafter!

### General Discussion

Mr. FRANK COKE said that the claim of this country to be the first in the field of allergy rested on the extraordinarily accurate description by Hyde Salter of himself as a cat asthmatic—a description which could not be improved upon to-day, even though written seventy years ago. In the treatment of asthma an enormous advance had been made by the addition of adrenaline to the desensitizing doses of protein, thereby allowing much larger doses of the protein to be administered and the whole course of treatment to be speeded up. He also drew attention to the differential sedimentation test, by which an examination of the serum of a patient allowed the case to be placed into the allergic, microbic, or aspirin-sensitive group. The subdivision into these three groups allowed the effect of any one treatment, such as gold, to be tried and the results recorded. Work on allergy had rather overshadowed consideration of the bacterial types of asthma. Much attention was now being attracted to these types, and with success, so that even the aspirin-sensitive patient was becoming curable by vaccines made from organisms recovered from the nose and given in suitable doses. Dr. G. W. BRAY suggested that all protein foods, especially in allergic cases, were absorbed from the lymphatics of the stomach, passed direct through the thoracic ducts, and so into the lungs. Experimental findings, coupled with observations he had had the opportunity to make, seemed to point to the lymphatics as the primary route of absorption rather than the blood.

## PREVENTION AND CONTROL OF ADDICTION

At the meeting of the Society for the Study of Inebriety on January 11 two papers were read under the title of "Some Official Contacts with Addiction," one by Dr. W. NORWOOD EAST, H.M. Commissioner of Prisons, and the other, dealing with the subject from the international point of view, by Major W. H. COLES, H.M. Chief Inspector under the Dangerous Drugs Acts and United Kingdom representative on the League of Nations Opium Advisory Committee.

Dr. Norwood East began with a review of the various legislation and regulations before, during, and since the war which had contributed to the prevention of alcohol and drug addiction. He mentioned particularly the following:

The Children's Act, 1908, which prevented children from being taken into licensed premises, and imposed penalties for giving intoxicating liquor to a young child except in special circumstances.

The Small Holdings and Allotments Act, 1908, prohibiting any dwelling-house or building on the holding being used for the sale of intoxicating liquors.

The Defence of the Realm Regulations during and following the war, with their various restrictions.

The decision of the Central Control Board (Liquor Traffic) in 1916, leading to the State management of licensed premises at Carlisle.

More recent legislation included:

The Road Traffic Act, 1930, with its penalties for motor drivers found to be under the influence of drink.

The Licensing (Permitted Hours) Act, 1934, enabling justices to vary the hours of opening.

The Dangerous Drugs Act, 1932, amending earlier Acts.

The Extradition Act, 1932, making it possible to include offences in relation to dangerous drugs in the list of extraditable crimes.

The Pharmacy and Poisons Act, 1933, with its attendant rules.

Various statutory Orders controlling the manufacture, possession, and distribution of narcotic drugs.

The average number of persons dealt with summarily for offences which may be placed under the general heading of drunkenness in the years 1910–14 was 193,354. The figure fell to 33,858 in 1932, but since then there had been a gradual rise to 48,110 for 1935, the last year for which figures were available. The number of persons received into prisons on conviction for drunkenness in 1913 was 52,149; in 1932 it had fallen to 5,836, but a slight upward tendency since then had to be noted, and in 1935 the figure was 6,880. The approximate number of drug addicts in the United Kingdom known to the central authorities in 1936 was 616, being almost equally divided between the sexes, and representing one in 76,000 of the population. Of this total 137 were said to be members of the medical profession.

Dr. East said that the curative value of imprisonment for drunkenness had probably never been convincing; at the same time persons addicted to alcohol no doubt derived benefit even from short periods of enforced abstinence. Prison medical practice necessarily afforded a large-scale experiment in the relation of the abrupt withdrawal of alcohol to delirium tremens. When cases were more numerous it was the general experience of prison medical officers that on persons verging on an attack of delirium tremens being received in prison, the enforced abstinence and medical care and treatment often shortened the attack; there was no reason to believe that recent experience pointed to a different conclusion. Abrupt withdrawal in cases of addiction to narcotic drugs was also the usual practice of prison medical officers, and the fact that the patient realized that he was under control and must face up to the situation had therapeutic value. Further, there was some reason to think that the sense of inferiority and dependence in the addict was less pronounced in the prison hospital because he realized there that other patients were also social failures, and, like himself, must be readjusted to society.

### International Conventions

Major W. H. Coles reviewed the advance in the control of the trade in narcotic drugs brought about by the Geneva Convention, 1925, which extended the import and export certificate system and set up the Permanent Central Opium Board. By these means discrepancies between the amount of drugs exported and imported were virtually eliminated—in other words, the escape of licitly manufactured drugs into the illicit market was prevented. This control was supplemented by the inauguration, through the Limitation Convention, 1931, of a complete system of limitation of manufacture of drugs to medical and scientific needs and the setting up of a body to supervise and if necessary to frame estimates of the drug requirements of all countries. Major Coles gave an account of the work of this supervisory body, and said that thanks to the stricter application of the international conventions there had been during the last few years a progressive shrinkage in the difference between the quantity of drugs manufactured and the quantity legitimately consumed. Statistics furnished by Governments showed that the amounts manufactured approximated more and more to the legitimate consumption, leaving little apparent margin available for the illicit market.

No precise knowledge was available of the amount consumed for the purpose of maintaining addiction, nor could any accurate estimate of the number of persons using drugs for that purpose be formed. It was certain that in some countries the number of addicts was very small and in others very large. In 1930 the Canadian authorities estimated approximately one addict in 1,000 of the population, and the United States reckoned a similar figure. In 1928 it was considered that the proportion of addicts in the large towns of Germany was one in 10,000, and one in about 18,000 elsewhere. In Egypt it was estimated in 1930 that the addicts numbered half a million in a population of fourteen millions, but this figure had been much reduced in later estimates, and in 1934 the Egyptian authorities reported some 18,500 addicts. The Chinese Government, in reply to a questionary addressed by the League of Nations, gave the number of registered opium addicts as 3,700,000. It had been stated that in Harbin there were no fewer than 300 heroin dens, besides 100 authorized opium saloons. No one knew how many clandestine factories there were, nor what was their output.

The next step in control, leading, it was hoped, to the ultimate elimination of illicit traffic, was the limitation of the production of the raw materials from which drugs were produced to the quantity necessary to supply the medical needs of the world. The preliminary work in connexion with this task was in progress.

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## CAUSES AND TREATMENT OF STERILITY

At a meeting of the West London Medico-Chirurgical Society on January 7, with Dr. G. RICE-OXLEY in the chair, a discussion took place on sterility or infertile marriage, its causes and treatment.

Mr. EARDLEY HOLLAND described a routine of examination and treatment which had been found successful in a certain number of cases. It began with an investigation of the history and a cursory gynaecological examination, following which the woman was given a prescription of thyroid gland in graduated doses. This first stage included an examination of the husband; he refused to have anything to do with the case unless the husband co-operated. The second stage of treatment, after three

months on thyroid, began with a more complete examination of the tubes, using lipiodol, which was much more reliable than insufflation. In a certain proportion of cases the lipiodol injection was followed by patency of the hitherto blocked tubes. The third stage of treatment was by means of hormones. In the large proportion of cases in which there was genital hypoplasia considerable doses of the follicular hormone might be given.

### Correlation of Factors

Mr. KENNETH WALKER dealt with conditions in the male. He asserted that if it were possible to correlate all the factors in childless marriage it would generally be found that they were multiple, and that there were adverse factors on the side both of the male and of the female. He thought that the importance of such conditions as infection of the genital tract had been over-stressed in the past. Gonorrhoea, it was true, could produce absolute sterility, but in the usual cases of childlessness what was found was not absolute sterility but impaired fertility. Ten years ago in such a discussion he would have laid chief emphasis on local conditions; to-day he would lay chief emphasis on constitutional troubles. Endocrinology offered some hope, though he did not mean that every case was due to dysfunction of the endocrine glands.

Mr. V. B. GREEN-ARMYTAGE suggested that it was important that medical officers and matrons of girls' schools should carefully observe the time of onset and type of menstruation. Hypoplasia did not begin at the age of 25 when the woman came to the gynaecologist, but it began in early youth, and if care were taken at that period as to diet, exercise, and the giving of oestrogenic substances when necessary subsequent infertility might be lessened. Mr. Green-Armytage was convinced that contraceptive measures in the early days of marriage were inimical to pregnancy at a later date. He showed lantern slides of lipiodograms taken in various types of cases. Salpingography was carried out as a routine on the Continent, and if general practitioners realized its ease and painlessness more of these cases would be investigated. It had the advantage over insufflation in that it gave information as to whether both tubes were patent or only one, and whether there was any abnormality in the uterus.

Dr. F. J. MCCANN referred to the importance of preventing certain childish ailments, which left a far more important imprint than was generally realized. Many of the exanthemata and other acute diseases of early life caused vulvo-vaginitis, forming adhesions, but they also left their mark on the ductless glands, and the result was seen only after puberty. Irregularity of menstruation in the young girl should be looked upon as a serious condition demanding treatment, the treatment being first diet, secondly exercise, and thirdly appropriate medication. Dr. McCann added his strong belief that contraceptive measures did delay fertility for a considerable time, and might cause sterility.

Others who participated briefly in the discussion were Dr. MALCOLM DONALDSON, Mr. G. J. SOPHIAN, and Dr. VAUGHAN PENDRED.

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From recent reports in the Press supplied by Reuter it appears that Sister Elizabeth Kenny, whose methods of treating anterior poliomyelitis form the subject of an article by Dr. F. H. Mills at p. 168 of this issue and are commented on at p. 178, has been asked to supervise a test of her treatment which is to be carried out by the Government of Victoria. In the epidemic of poliomyelitis which is at present causing concern in Victoria, 1,600 cases and eighty-seven deaths have been notified up to the end of December. Twenty-two hospital beds have been placed at the disposal of Sister Kenny, and the results of her treatment will be watched by a medical panel which is to be set up by the Victorian Branch of the British Medical Association.

# Local News

## ENGLAND AND WALES

### The Tuberculosis Problem in Wales

The Government inquiry into the new scheme of the Welsh National Memorial Association for combating tuberculosis in Wales opened at Cardiff this week, when Cardiff Corporation and several of the Welsh county councils raised objections to the estimates of the Association on the ground that they would cause an unjustifiable increase in expenditure during the next five years. The Memorial Association proposes a capital and extraordinary outlay of nearly £400,000 on hospitals, clinics, and sanatoria. The Cardiff City Council objects that items are introduced involving financial principles to which it declines to contribute. In its opinion the new hospital at Swansea, which the Memorial Association proposes should be built at a cost of £200,000, is not justified by the circumstances. It also takes exception to the basis of contribution, and argues that during recent years the increase in expenditure to combat tuberculosis in Wales has been out of all proportion to that of other health services. A statement prepared by Lord Davies, president of the Memorial Association, was read to the Committee of Inquiry before evidence was taken. The whole of the first day's session was given up to an examination of a long memorandum setting out the history and achievements of the Association and its recommendations.

### L.C.C. Mental Health Services

Vol. VI of the Annual Report of the London County Council for 1936[1] deals with the administration of the Council's mental health services during the year ended March 31, 1937. On the last day of 1936 the total number of patients for whom the Mental Hospitals Committee was responsible was 38,282. The average annual increase in the number of mental patients for whom institutional care has been provided since 1920 was 584. The need for accommodation for persons who are mentally disordered is approximately in the ratio of 3 male beds to 4 female beds. The number of cases of mental disorder receiving institutional treatment shows a ratio of 6.62 per thousand of the population of the County of London. Nearly 70 per cent. of the direct admissions during 1936 were first attack cases, and prolonged mental stress was deemed to be the principal cause of mental breakdown in 520 of the 3,437 cases admitted directly. The total number of patients readmitted during 1936, after having been previously under treatment as certified, voluntary, or temporary patients, was 753, representing 21.2 per cent. of the total number of admissions. At the London County mental hospitals 11.27 per cent. of the certified patients were allowed parole in the hospital grounds, and 3.45 per cent. were permitted to be on parole outside the grounds; 11.90 per cent. were granted short periods of leave up to four days. An experiment is being made at one hospital to provide a few suitable voluntary patients, after recovery, with special training at educational institutions in trades for which they appear to have taste or aptitude in preference to some uncongenial form of prior employment, so that they may be able to take their place in the outside world again with a better chance of success and with less risk of a further mental breakdown. Some interesting figures are given relating to general paralysis of the insane before and after the commencement of the treatment by induced malaria. During the six years 1908–13, of the total number of such cases under care only 1.49 per cent. were discharged and 79.92 per cent. died, whereas during the six years 1930–5, 19.8 per cent. were discharged and only

[1] P. S. King and Sons, Ltd., 14, Great Smith Street, S.W.1. (1s., post free 1s. 2d.)

40.8 per cent. died. During 1936 at the Maudsley Hospital (where none but voluntary patients are treated) 959 persons suffering from early mental or nervous disorder were treated as in-patients and 3,811 as out-patients. A further 1,468 persons were treated as out-patients at psychiatric clinics established in association with the Maudsley at three of the Council's general hospitals north of the Thames. The total number of living mental defectives known to the Council at December 31, 1936, was 17,207, of whom 10,937 were under active care—a ratio of 4.16 per thousand of the population of the County of London.

### Research on Mental Defect

On January 7 the board of directors of the Royal Eastern Counties Institution for the Mentally Defective, Colchester, entertained the members of the Darwin Trust to lunch at the informal opening of the research laboratories attached to the institution. Among those present were Sir Hubert Bond, Miss Darwin, Professor Adrian, Dr. Landsborough Thomson, and Dr. E. O. Lewis. Towards the cost of the building the Hon. Alexandrina Peckover contributed £2,200, the Hon. Lady Darwin £500, and it is hoped that other contributions will be received. The Rockefeller Foundation has given £700 and the Darwin Trustees £50 towards the cost of equipment, and the Rockefeller Foundation is making an annual grant of £600 for five years to provide additional research workers. Dr. L. S. Penrose, who is a member of the external scientific staff of the Medical Research Council, is directing the work. The permanent workers in the department are a social investigator, two laboratory technicians, and a biochemist. Attached to the department are Dr. Munro (Beit Fellow) and Mr. J. C. Raven (Medical Research Council grant). The building is single-storied, 77 ft. long by 40 ft. broad, on a site adjacent to Turner Village. It contains one laboratory suitable for biochemical and pathological investigations, another for microscopical work, a clinical room, dark-room for photography, three offices, testing-room, workroom, and lavatories. The heating and hot-water supply are provided by an automatic gas-fired boiler. Among the items of equipment is an electric calculating machine. A Medical Research Council special report, entitled "A Clinical and Genetic Study of 1,280 Cases of Mental Defect," which will give the results of the work of the last seven years, is to be published early this year.

### The Welfare of Cripples

In its origin the word "cripple" meant "one who creeps," or perhaps, in the Scottish phrase, is "cruppen up," and the 1611 version of the Bible renders the phrase in the Acts of the Apostles "a creeple from his mother's wombe." A revolution has taken place in crippledom during the last generation, partly due to new orthopaedic treatment, and partly to a new care for the cripple from the social, educational, and vocational points of view. Special services for cripples are almost entirely a growth of the present century. It is true that a few institutions for cripples were established in the nineteenth century, and the first hospital reserved exclusively for orthopaedic cases, now the Royal Cripples Hospital at Birmingham, was founded as far back as 1817. But the first of the modern type of orthopaedic hospital was built in Cheshire in 1899 by the Royal Liverpool Children's Hospital to carry out the methods recommended by Sir Robert Jones, the pioneer of the new movement, and in the following year Dame Agnes Hunt founded the home at Baschurch which is now the orthopaedic hospital at Oswestry. All this and much more is described in the handbook issued by the Central Council for the Care of Cripples.[1] There are chapters on the discovery of the cripple, by which is meant the search for those who are in need of orthopaedic treatment to prevent later crippling, the treatment of cripples when discovered, and their training and rehabilitation. The chapter on treatment is written for the layman, and is intended to give only a general idea of the treatment applied to orthopaedic cases, so that he may appreciate the reason why it is lengthy and the need for after-care. The considerable powers and duties of public authorities are clearly set out; extensive as these are, there is plenty of work remaining to be done by voluntary associations, and this is also described. The handbook gives some useful directions for the lay-out of an orthopaedic hospital, including the out-patient department and fracture clinic. The conditions which a rehabilitation centre should fulfil are noted. At present, while the treatment of injuries, restoration of function, and vocational training are provided to some extent at centres in different parts of England, there is still no provision for reconditioning, except for the small centre established by the L.M.S. Railway at Crewe. It is hoped that before long one such centre may be established on a large scale by way of experiment.

[1] *Handbook on the Welfare of Cripples.* Published by the Central Council for the Care of Cripples, 34, Eccleston Square, S.W.1. (1s.)

## SCOTLAND

### St. Andrews Institute for Clinical Research

The annual report of the James Mackenzie Institute for Clinical Research states that the institute has now accumulated a large number of records which promise to yield information of much value, and that the work of record-taking still goes on. During the year ended July, 1937, forty-eight new cases were taken and 806 notes were added to the existing cases. The annual classification of the records showed that 50 per cent. were complete, 22 per cent. required to be brought up to date, and 28 per cent. were incomplete, chiefly because patients had left the district. Periodic examination of children continued. Most of them had been under observation since birth, and in many instances the child's family and environment had been observed for a much longer time. Children were recalled to the institute for routine examination two or three times each year, while houses were visited and conditions correlated with those of the children. Early in 1937 a survey of congenital heart cases was started, and it was decided for control comparison to tabulate the case histories of some hundreds of children who had been observed from birth to about 10 years of age. This statistical survey is regarded as unique and capable of yielding valuable information. Since the foundation of the institute in 1919 the family doctors of St. Andrews have worked in full co-operation with the public health department in all activities affecting the well-being of the people, and the report considers that legislation shows a gradual trend "towards the creation of a system of public health administration similar to that which has arisen out of Mackenzie's teaching." In the laboratory of the institute during the past year 693 investigations were carried out, and in the *x*-ray department 308 examinations. Various donations for research are recorded. The expenditure for the year amounted to £1,407, and the income to £1,039, but the funds still amounted to £14,870.

### Scottish Universities By election

A writ for the combined Scottish Universities Parliamentary by-election caused by the death of Mr. Ramsay MacDonald is being issued this week. It will be a four-cornered contest. The candidates are the Right Hon. Sir John Anderson, lately Governor of Bengal, who is supporting the National Government as nominee of the Unionist Association of the Scottish Universities; Miss Frances Helen Melville, LL.D., late Mistress of Queen

Margaret College, University of Glasgow, who is standing as an Independent; Professor A. Dewar Gibb, who holds the regius chair of law in the University of Glasgow and is standing as representative of the Scottish Nationalist Party; and Sir Peter Chalmers Mitchell, LL.D., D.Sc., F.R.S., who was adopted as Independent Progressive candidate at a meeting of Scottish graduates held in London last week. Sir Peter retired from the secretaryship of the Zoological Society of London in May, 1935; in earlier life he was for some ten years lecturer in biology and examiner in zoology at London University and the Royal College of Physicians. At his nomination meeting he declared himself an advanced left-wing progressive, a democrat who believed that any stable structure of society must be based on the will of the people expressed in complete freedom of religious and political opinion with equality of sex and race.

### Training in Psychiatry

Dr. I. M. Sclare, consulting psychiatrist to the Public Health Department of Glasgow, recently addressed the Scottish Association for Mental Welfare on the subject of "Psychological Illness." He said that psychological disorders were evidenced by various disturbances of function, and might affect any organ of the body, even when the patient did not suffer from a specific bodily condition. Many thousands of people suffered from functional illness without any mental disorder, and some of these had a great dread of insanity. Psychological illness, moreover, should not be regarded as a halfway house between physical and mental disturbances, for functional illnesses often occurred in people of superior mental and physical attributes. The prevalence of this type of illness had been variously estimated to be the fundamental factor in from one-third to three-fourths of all sickness. The serious aspect was that the patient was deprived of his potential value to the community, and his illness might be unconsciously imitated by his children in later life, impairing them emotionally or intellectually. Crime, delinquency, and political extremism might be the ultimate result of such a condition. Medical students, he held, should be taught in a course of psychiatry to detect the psychological factors in all illness, and to recognize the need for specialist treatment when confronted by difficult problems. Doctors would then have a better understanding of their patients, and hospitals would be considerably less congested, while psychiatric clinics would spring up where functionally sick persons would willingly go for treatment.

### The Nursing Problem

At the annual meeting of subscribers to Stirling Royal Infirmary an address was given by Miss F. N. Udell, organizer for Scotland of the College of Nursing, in which she said that they were faced with an acute problem in the grave shortage of suitable candidates for the nursing profession. It was sometimes stated that this was because conditions were bad, hours of work long, and nurses were treated like slaves; but nurses themselves did not think that these were the reasons. It was not proved that there was any decrease at the present time in the number of candidates coming forward; the shortage was really due to the tremendous extension of nursing services throughout the country. Figures recently collected showed that during the last ten years, in four of the large hospitals of Scotland alone, 300 additional nurses were required each year. In pre-war days, if a girl wanted to take up professional work she had practically to choose either nursing or teaching; to-day there was virtually no profession that a woman might not enter, so that nursing was now in competition with all the other professions open to women. With regard to nurses' hours, this question could not be dealt with by rigid legislation; there were emergencies which, every nurse of experience would admit, might make it necessary to work longer hours. The work of the nursing profession was not going to be served in the best way if it was reorganized by outside bodies knowing nothing of the rather peculiar difficulties that the profession had to meet. The speaker appealed to the public to recognize as much as they could the difference between a trained nurse and other persons who called themselves nurses. They wanted to educate the public and the medical profession to the fact that nurses were now State-registered, and that untrained women were not serving the best interests of the profession. Dr. P. F. McFarlan said it was admitted that nurses had long hours, but these hours were shorter than they used to be. Complaints were sometimes made that discipline in hospitals was too severe, but discipline was necessary if nurses were to be properly trained for their duties in life, and hardship in the nursing profession was not overwhelming during training. The superannuation scheme which had lately been started by the College of Nursing ought to be made universal and interchangeable between all hospitals. It was, he thought, little short of a catastrophe that a regulation of the profession of nursing should tell a probationer on the threshold of her career that she should not work more than forty-eight hours in a week.

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## FRANCE

[FROM OUR CORRESPONDENT IN PARIS]

### Freak Deaths

Several correspondents have lately exchanged experiences in that admirable fortnightly journal *Le Siècle Médical* with regard to freakish and often disconcerting deaths among their patients. The best story of the bunch is that told by Dr. Parrique, who in any but a highly respectable medical journal would be suspected by his readers of romancing. Some years ago he was called to a patient suffering from a bulky pleural effusion on the left side. The heart was displaced, dyspnoea was severe, and the patient was cyanosed. Aspiration seemed urgently indicated, so he thrust an artificial pneumothorax needle into the chest. Before he could withdraw the stylet and proceed to aspiration the patient collapsed and died within a second of the puncture, which was made in the customary position at the back of the chest. Three hours later he was called to a very similar case, and the patient's death at the moment of introducing a needle into his chest was as prompt and spectacular as in the first case. In the evening of the same day the really rather unfortunate Dr. Parrique was summoned to a third patient suffering from heart disease and a large bilateral hydrothorax. It is easy to understand the hesitation to which he confesses. But after all puncture seemed to be the only rational method to relieve the patient's distress, and Dr. Parrique had just steeled himself to do his duty and defy fate when the patient suddenly died before even his skin had been pricked—*Lex coincidentiae!*

### Massive Hospitalization of Children

The comparatively young and still potentially fertile national sickness insurance in France has resulted in a prodigious crop of hospitals, convalescent homes, "preventoriums" *et hoc omne genus* for children. What has been lacking in quality has been more than made good—or bad—by quantity and, above all, by variety. The owners or tenants of buildings ranging from mansions to bungalows and huts have obeyed the call of profitable altruism and have turned them overnight into nursing homes, convalescent homes, etc. In catering for children it is apparently quite easy to turn a drawing-room into a modern nursery by plastering the walls with childish pictures and spraying the floor with toys. The other rooms of a house having been "converted" on the same

principle to meet the supposed needs of their prospective juvenile occupants, and the domestic staff having been promoted wholesale by the simple device of putting them into nurses' uniforms, nothing remains save to advertise widely and wisely. The former Minister of Public Health, M. Sellier, was so impressed by what he learnt of the activities of these mushroom institutions that he issued a circular on the subject in April, 1937. According to this circular "preventoriums" should be classified according as they belong to one or other of three well-defined groups. To belong to the first a children's "preventorium" has to be provided, among other things, with a resident medical officer, *x*-ray apparatus, a laboratory, and hospital beds; third-group institutions must provide sufficient material comfort, proper surroundings, and plenty of good food. At the present time the prefects throughout France are completing a survey of the children's "preventoriums" within their jurisdiction, and when their findings are available it is to be hoped that the selection of temporary homes for delicate, sick, or convalescent children will be made with more discrimination than has hitherto been possible.

### Professor René Leriche

It will be remembered that the last occupant of the chair of medicine of the Collège de France was the late Professor Charles Nicolle. The Academy of Sciences, whose duty it is to recommend candidates for this vacancy, has headed its list with Professor René Leriche of Strasbourg. His work on the sympathetic nervous system, not to mention several other activities, earned him an international reputation many years ago, and his treatment of recent sprains by the prompt injection of local anaesthetics has attracted considerable attention. To epitomize the guiding principle of his career one might say he has made surgery the efficient servant of physiology.

### "Perhaps" Surgery and the Forty-hour Week

When Dr. Georges Duhamel, literary star and ex-surgeon, addressed the Academy of Medicine on December 7 on the application of the forty-hour week to the Paris hospitals he created quite a sensation by the picture he drew of the demoralization which he believed had followed the application of this measure. With the operating theatre staff replacing each other at comparatively short intervals, surgeons, he said, would be informed that such and such an instrument just about to be used was "perhaps" sterilized. Much of the rest of his address was in the same strain. It quickly became a political issue in the lay press. On December 21, before the same forum, a vigorous counterblast came from no less a person than M. Mourier, who is at the head of the Paris Assistance Publique, responsible for 42,000 hospital beds. The gist of this counterblast was that if Dr. Duhamel had painted a true picture the new law would be reflected in a rise in the hospital mortality. In 1936, before the introduction of the forty-hour week, there had been 157,930 admissions and 11,879 deaths. In 1937, after the introduction of the forty-hour week, there had been 158,610 admissions and only 11,763 deaths. In other words, during the first seven months of the new law the hospital death rate had gone down, not up. Another of M. Mourier's points was that an inquiry instituted in most of the Paris hospitals since December 7 had shown that the patients received just as good treatment in the operation theatres as before. He added that no surgeon had reported to him any fatal lapse due to the new law. To which Dr. Duhamel retorted on the same occasion that the problem was not yet one of mortalities but of moralities. He added that the correspondence he had received from hospital physicians and surgeons in Paris and the provinces constituted a dossier whose cumulative effect was undeniable. Who is telling the truth? Both, surely, but slightly divergent aspects of it.

# Correspondence

## Pasteurization of Milk

SIR,—Dr. Norman Macfadyen's letter in your issue of January 15 (p. 148), coming from one who is not only a member of a local authority but a medical man, may be expected to carry some convincing weight. It is therefore to be assumed that in considering the matter in both capacities he has weighed every relevant factor before expressing himself so definitely in print. He makes no mention, however, of the effectiveness or otherwise of correct pasteurization in minimizing the risk of the organism of tuberculosis reaching the consumer. He has not said, in defence of "T.T." milk, what it could have done to prevent a communal tragedy such as occurred in this district in 1936; or others of the hundred or more outbreaks of infectious illness, streptococcal and otherwise, which have been recorded since 1912 in this country attributable to infection from raw milk, and which were in so many instances effectively checked by pasteurization.

May I refer Dr. Macfadyen to the most recent summary of available knowledge on milk generally in "The Milk Problem" (*Bulletin of the Health Organization of the League of Nations*, vol. vi, No. 3, June, 1937), and draw his and other troubled spirits' attention in particular to such references as on page 49—"Great Britain: *Brucella abortus:* milk from tuberculin-tested herds affords no exception, and as many as 74 per cent. of samples have been found infected"; on page 75, "So far from there being antagonism between pasteurization and clean milk production, there should be a very close association," and, "It is now abundantly clear . . . that milk treated by holder pasteurization . . . in properly designed and efficiently operated plants is free from living tubercle or *abortus* bacilli"; on page 79, "The provision of a safe milk supply to the human population is essentially a public health problem and can be solved satisfactorily only by compulsory pasteurization."

It is perfectly true that extracts apart from the whole context may put fallacies in the path of argument. I would, however, assure Dr. Macfadyen that my concern has been, first, to conserve the space of the *Journal*, and, secondly, to stimulate Dr. Macfadyen's enthusiasm to the extent of reading the whole illuminating and critical study to which I refer above.—I am, etc.,

R. J. MAULE HORNE.

Public Health Department, Poole, Jan. 15.

SIR,—Dr. Norman Macfadyen may be justified in his claim that "our certified T.T. milk" at Letchworth has produced better results than its local rivals. He must, however, be well aware that a supply of T.T. milk anything like adequate to meet the needs of the community is impossible, for the very sufficient reason that the herds to produce it do not exist, and, at the best, cannot exist for many years. Hence even if his prescription for the admitted ills of the milk supply is allowed to be theoretically effective, it is none the less useless as a practical measure.

Meanwhile, raw milk as distributed to the community contains in some 5 to 10 per cent. of the specimens examined living tubercle bacilli, and is, as recent events have illustrated, an agent in the distribution of epidemics of certain acute infectious fevers, while efficient pasteurization prevents these mischiefs and leaves the nutritive qualities of the milk practically unimpaired.

The discussion of an ideal non-existent milk supply may be an interesting exercise in rural retreats, but in the world of practical affairs the choice, in fact, is between a safe and an unsafe milk supply. To the consideration of safety Dr. Macfadyen does not seem to have applied his mind. Everyone would agree that milk should be pure—that is, free from adulterants—and clean—that is, free from dirt; also that its bacterial count should not be excessive. Surely, however, it is particularly the responsibility of the medical profession to insist that milk should be safe—that is, free from the risk of communicable disease. Such representative medical organizations as the Royal College of Physicians, the British Medical Association, and the Joint Tuberculosis Council have publicly and repeatedly recognized this obligation, and have urged the protective value of pasteurization in the general interest. Dr. Macfadyen finds this policy a "cunning" attempt to influence public opinion. The original meaning of this adjective I take to be "kenning" or "knowing," and in this sense the term may be accepted as a compliment. Later and perhaps more common meanings include such equivalents as "artful," "crafty," and "sly," and I am sure Dr. Macfadyen would not so label the activities of his professional colleagues. These activities, I agree, are based on "knowing," and Dr. Macfadyen is good enough to say so.—I am, etc.,

London, Jan. 17. C. O. HAWTHORNE.

## Gastro-enteritis due to Bact. sonnei

SIR,—In the third paragraph of his interesting paper on Sonne dysentery (*Journal*, January 8, p. 64) Dr. Reginald Miller makes two statements about the so-called epidemic gastro-enteritis with which I cannot altogether agree—namely, that it is essentially a summer disease and strictly confined to infants. Epidemic gastro-enteritis is, of course, an ill-defined condition, and doubtless Dr. Miller refers to the disease, if such it can be called, known formerly as summer diarrhoea. This was endemo-epidemic in type, with large summer outbreaks attended by a high infant mortality. But the cases were, and still are, by no means confined to children. O. H. Peters, in a masterly field study entitled "Observations on the Natural History of Epidemic Diarrhoea" published in the *Journal of Hygiene* for 1910 traced the infection of fatal cases in children to mild cases in adults. For example, some signalmen working in the same signal box, and infecting each other with diarrhoea, conveyed the infection to the children in their own homes situated widely apart.

The summer epidemics were shown by a number of observers to be due to fly-borne infection. With the increased control over the breeding places of flies the time of the seasonal outbreak has become later in the year, and the greatly reduced peak now commonly falls in October. In some years the maximum number of deaths from "gastro-enteritis" occurs in the first quarter of the year. This winter peak is clearly not due to a specific infection, being secondary to droplet-borne respiratory infections, often associated in young infants with mastoid disease. Outbreaks of Flexner dysentery, as Dr. Miller points out, cause fatal cases in older children. From time to time a family outbreak of this disease occurs in Liverpool and fatally affects children of 2 to 5 years of age; a clinical diagnosis of Flexner dysentery has always been confirmed by bacteriological examination. To what extent the disease known formerly as summer diarrhoea was caused by the *Bact. sonnei* is a matter for conjecture. Examination of material from cases of infantile diarrhoea has not, in Liverpool, shown any large proportion of Sonne infections. On the other hand, a recent outbreak of mild diarrhoeal infection on a training ship revealed a number of cases of this type among adolescent youths.—I am, etc.,

Liverpool, Jan. 11. C. O. STALLYBRASS.

## Use and Abuse of Antiseptics

SIR,—Professor Alexander Fleming in his letter under the above title in your issue of January 15 (p. 141) compares the effects of acriflavine on leucocytes and bacteria *in vitro*. The experiments are cited presumably in order to suggest that such antiseptics cannot be efficacious in combating infections. The general question is discussed in my Cameron prize lecture.[1] Here I shall refer only to two sets of conclusive experiments carried out on infected animals. In the first the infection of recent wounds in guinea-pigs was cured by the brief application of acriflavine[2]—mere washing with hypertonic or isotonic saline was ineffective. Secondly, infection of the peritoneal cavity in mice with virulent streptococci was cured by the subsequent injection into the peritoneum of acriflavine or certain anilquinoline antiseptics of the series to which quinanil belongs.[3] In the last case it has been established that the therapeutic effect was not due to the rapid killing of the organisms by the antiseptic, but that cure was brought about by the co-operative action of the drug and the natural tissue defences. The effort to prove by *in vitro* tests that a chemotherapeutic agent cannot cure an infection when it actually does bring about cure in the living body reminds one of the conception of a tragedy attributed to Herbert Spencer—namely, a beautiful deduction slain by an ugly fact.

As to sulphanilamide, the rationale of its remarkable action in generalized experimental streptococcus infections is by no means elucidated as yet.—I am, etc.,

Glasgow, Jan 15. C. H. BROWNING.

## Early Diagnosis of Diphtheria

SIR,—As medical officer of a provincial isolation hospital I am greatly concerned at the delay in sending cases of diphtheria into hospital. Every practitioner should be aware that in any virulent case of diphtheria in which the patient is not producing his own antitoxin serum must be administered on the first or second day of the disease in order to save life. Yet there are still many practitioners who do not regard these cases as urgent.

Any virulent case of diphtheria can easily be recognized clinically on the second day. The swelling of the neck alone tells the tale. There is no other form of sore throat which produces a diffused swelling of the glandular and periglandular tissues of the neck by the second day of the disease. Every case of diphtheria which, if not treated, is virulent enough to prove fatal will reach the "bull-neck" stage by the fourth day, and the early stages of that "bull-neck" appearance are quite recognizable on the second day. If every practitioner who is called in as early as the second day to a case of diphtheria would recognize this diagnostic feature of the disease and realize that this is an indication for immediate administration of at least 40,000 units of antitoxin many lives would be saved. To take a swab and await the result in cases of this sort is to throw away a life. I am not of course

[1] *Edin. med. J.*, N.S. (IVth), 1937, **44**, 497.
[2] Browning and Gulbransen. *British Medical Journal*, 1925, **1**, 688.
[3] Browning, Cohen, Ellingworth, and Gulbransen. *J. Path. and Bact.*, 1931, **34**, 592

referring to circumscribed glands which can be felt with the fingers but to a diffuse enlargement of the anterior triangle of the neck which is visible. All other forms of tonsillitis which may resemble diphtheria either never cause swelling of the neck or only do so after many days.—I am, etc.,

Reigate, Jan. 11. HAROLD J. FARDON.

## Lymphangioplasty

SIR,—My attention has been drawn to the interesting article on lymphangioplasty by Mr. Harold Hartley and Dr. R. A. Kemp Harper in your issue of November 27 last (p. 1066).

It is some testimony to the vitality and value of my operation that thirty years after its introduction it is the subject of an article in your columns, and that I have recently been asked to write a chapter on the subject for an American book. My own opinion on the operation as regards the lower extremity is that it has been superseded by Kondoleon's operation of fenestration of the deep fascia, which gives the lymph of the superficial tissues access to the subfascial (muscular) tissues where the lymphatic vessels are usually intact and able to absorb it. The valves of the deep lymphatics combined with intermittent muscular contractions form a pump mechanism which can overcome the action of gravity. In lymphangioplasty no such pump action comes into play, and gravity in the lower limb is too powerful to be overcome by the wick action of the buried silk threads.

For these reasons, while congratulating Mr. Harold Hartley on the brilliant success of his case, I am half inclined to agree with his modest conclusion that his operation had nothing to do with it. But such a verdict is against the weight of the evidence, for after the operation the condition of the patient, previously static or deteriorating, steadily improved. Mr. Hartley fails to consider the possibility—a very important one—that the operation may in favourable cases exert a permanent effect by breaking a vicious circle. When a tissue is in a state of solid oedema the pressure upon the veins of the exuded fluid, and of the fibrous hypertrophy which follows, must greatly increase transudation and so continually aggravate the oedema. If by silk drainage this pressure is relieved, even if only temporarily, transudation from the blood vessels will decrease, pressure upon any remaining patent lymphatics will diminish, and the "vis medicatrix naturae," to which Mr. Hartley gives all the credit, may complete the good work by the formation of new lymphatic vessels.

Dr. Kemp Harper's radiological evidence shows that silk threads may remain unabsorbed in the tissues for twenty-four years "without causing the slightest trouble," and is good criticism of Madden, Ibrahim, and Ferguson's conclusion that the wick action of the silk would soon cease owing to absorption of the silk. Madden's conclusion that silk as soon as it became encysted by fibrous tissue would lose its wick action is a pure hypothesis.

Let us now consider the upper extremity. Broadly speaking, the operation is only required for severe brawny oedema of the arm due to breast cancer. It must only be used for carefully selected cases where pressure on nerves is not present, where the threads will not have to pass through cancerous tissue, and where pleural effusion is absent. In such cases lymphangioplasty gives immediate relief from pain and restores the use of the arm for a period determined by the intrathoracic progress of the disease. The period may be short, but even so the relief is precious. It may be as long as five years. In these cases Kondoleon's operation is inapplicable, since all the lymphatics round the shoulder-joint, deep as well as superficial, have probably been reduced to solid fibrous threads by permeation.—I am, etc.,

London, W.1, Jan. 14. W. SAMPSON HANDLEY.

## Lower Abdominal Pains of Cervical Origin

SIR,—Professor James Young, in the *Journal* of January 15 (p. 105), has described a fairly clear-cut syndrome due to disease of the cervix—namely, the type of chronic cervicitis associated with retention cysts. He states that by treating such cases by dilatation of the cervix, radial cauterization, deep puncture with the electric cautery, and the evacuation of the gland cysts, he obtained cure or partial relief in about 80 per cent. In a number of unsuccessful cases a second operation produced relief. In other words, the proportion of successful cases (especially when one considers the type of patient) is, I think, creditably high. Despite this, Professor Young now combines these simple and harmless procedures with nerve blockage of the inferior hypogastric plexus, using 85 per cent. alcohol, or, more recently, proctocaine.

The technique of alcohol injection of Frankenhäuser's plexus was ably described by A. A. Davis in the *Lancet* (1936, **1**, 80), but Davis limited himself to the injection of but 1 c.cm. of alcohol on each side. It would be interesting to know whether Professor Young has seen any bladder complications following the much larger amounts that he uses. What I am still more concerned about is the possibility of such injections producing a pathology of their own. It is a regrettable fact that the exhibition of alcohol invariably produces tissue damage, with subsequent fibrous-tissue replacement. A fairly large experience of intrathecal injections of absolute alcohol for the relief of severe pain associated with cervical malignancy has made me chary of using alcohol, because I have now obtained histological proof that degenerative changes follow in the posterior nerve roots and the posterior columns of the cord adjacent to the site of injection. Recently other observers have reported similar findings. In consequence I feel that one should restrict such therapy to patients with a limited expectation of life, and I ask whether alcohol injections can safely be given into the base of the broad ligaments? It would be of interest to learn whether Professor Young knows of any late sequelae such as intractable neuritis or ureteral obstruction. I have been much struck by the frequency of ureteral obstruction in association with parametrial fibrosis, and presumably such injections, which are given in close proximity to the ureter, might be productive of similar late effects.

The biggest stumbling-block with all such therapeutic measures is undoubtedly the fact that we are largely dependent on subjective phenomena for our deductions. When dealing with severe and intractable pain the necessity for morphine, the prevention of sleep, and the willingness to undergo major operative procedures provide us with criteria which, to a certain extent, allow scientific deductions to be made. In the type of case discussed by Professor Young these criteria are not to hand, and in consequence it is extremely difficult to make observations carrying scientific weight. Personally, I think that the impracticability of obtaining sufficient comparable controls in which some of the known accessory (if not precipitating) factors can be adequately supervised is an almost insuperable difficulty. This type of case will continue to furnish us with an infinite variety of impressions, the effectiveness of any particular line of therapy being camouflaged by factors beyond our control, such as the family budget, coitus interruptus, or domestic upheavals. As a corollary, successful therapy will be associated very largely with the

personality of the individual doctor. In the present instance I would plead for the restriction of treatment to the simpler measures advocated by Professor Young—namely, dilatation of the cervix combined with thorough cauterization. To quote Professor Young's own *obiter dicta*, "In a large proportion of cases treatment of a simple nature directed to the underlying lesion is strikingly successful."—I am, etc.,

Manchester, Jan. 16. T. F. TODD.

## Shortage of Calcium in the Diet

SIR,—In discussing the alleged shortage of calcium in the "poorer-class" diet, Dr. Katharine Coward and her co-workers (*Journal*, January 8, p. 59) arrive at the startling conclusion that the child receives only 430 mg. of calcium while his daily requirements are 900 mg. But surely this amazing discrepancy arises in large part from the manner of calculation. The calcium content of the child's diet has been calculated from the analysis of the basal diet fed to rats—a basal diet to which was added in some groups of animals either calcium or milk. This diet contains almost no dairy produce, yet more than 55 per cent. of the calcium intake is derived from this source in the diet even of the poorest (Cathcart and Murray, *Med. Res. Counc. Rep.*, No. 218, 1936). In the diet of the poor child milk, and very often cheese, are included, the amount of the former being commonly augmented by free distribution in schools.

Accepting the figure of 430 mg. as the calcium content of the diet excluding dairy produce, it will be noted that the addition of three-quarters of a pint of milk alone would bring the figure up to 900 mg. Although it is admitted that all "poor" diets tend to be deficient in calcium, it seems to me that Dr. Coward and her co-workers in the experiments described have not established conclusively that there is a "serious shortage of calcium in the mixed 'poorer-class' diet." A fairer conclusion might be that milk and dairy produce, such as cheese, are desirable in larger quantities in the diet—a point which was urged by Professor E. P. Cathcart in the recent Hastings Lecture. Incidentally, the determination of the mineral needs of a relatively slow-growing organism like the child from experiments on a rapidly growing animal like the rat seems to be fraught with danger.—I am, etc.,

Glasgow, Jan. 10. IAN MURRAY.

## Treatment of Burns

SIR,—I have read profitably Mr. Mitchiner's article on the treatment of burns and scalds in your issue of January 1 (p. 27). I had been of the opinion that drastic mechanical cleansing of these injured areas under such light anaesthesia that it could scarcely be termed anaesthesia contributed largely to shock, and that loss of tissue fluids, dirty bacteria-laden fluids, in the first twenty-four hours after such accidents, as opposed to absorption, was desirable and therefore not a contributory factor to the mortality.

Noting Mr. Mitchiner's preference for a weak tannic acid solution, 2 per cent. rather than 5 per cent., I should like his opinion of the treatment by picric acid weaker than the 2 per cent. he refers to. Perhaps he could give his view of the following rather old-fashioned treatment.

Without any preliminary cleansing, gauze packs, wrung out in a solution made up of picric acid 90 grains, industrial spirit 3 oz., distilled water 40 oz., diluted with an equal quantity of warm water, are applied covered with a liberal quantity of wool and bandaged slackly. The dressings are changed easily next day since they will be saturated with dirty tissue fluids and gross dirt, while considerable coagulation has taken place. The next gauze dressings are left *in situ* and moistened from the outside daily with the same weak picric acid solution till such time as they become non-adherent.—I am, etc.,

Haydon Bridge, Northumberland, Jan. 11. RICHARD BELL.

## Rehabilitation Centres for Injured Workmen

SIR,—I have read with interest the memorandum of the Joint Committee of the British Medical Association and the Trades Union Congress on the subject of rehabilitation centres for injured workmen, a report of which was published in the *Supplement* to your issue of December 18, 1937.

No one can deny the value such centres would be to bridge the gap which at present is inadequately covered by "suitable light work." The organization suggested is admirable and the necessary personnel and accommodation clearly and succinctly set out in a way which reflects great credit on the members of the Committee. Is it wise, however, to jeopardize the realization of such useful centres by serious overstatement of facts? I refer, of course, to the sentence concerning the percentage of permanently disabled men:

"Now that the establishment and reorganization of fracture clinics is developing favourably, it may be anticipated that the proportion in the country as a whole will approximate to that of the fracture clinics already established, where experience has shown that permanent incapacity is inevitable in less than 5 per cent. of industrial injuries. With the continued advances of orthopaedic and traumatic surgery even this figure should be improved upon."

Where are these remarkable fracture clinics to be found? The insurance companies who have a serious financial interest in this do not know them and can produce some surprising figures. One large combine recently asked me if I knew of anything they could do to reduce the period of disability in their insurees and to bring their figures to within even measurable distance of the figures published by the British Medical Association Fracture Committee in 1935. They made the statement that 35 per cent. of men insured under them sustained some permanent incapacity, and that taking each hospital separately this figure did not vary very much whether the hospital had an organized fracture clinic or not. The reason for this similarity in organized and unorganized clinics can easily be explained: the latter tend to transfer their worst cases to the former, improving their own percentage and increasing the percentage of the organized service. But this will not wholly account for the discrepancy between the figures of the British Medical Association Committee and those of the insurance companies. If by permanent incapacity is meant total incapacity, let this be made clear; but I cannot think this is the explanation, for I am sure no hospital, however badly organized, could produce 20 to 30 per cent. total incapacity in the injured admitted to its out-patient department.

I raised such a storm of protest when last I criticized the figures of the B.M.A. Fracture Committee (a criticism which has since been justified) that it is with some hesitation that I enter your columns again. But if, as is suggested, we are to hope for Government support in this excellent system of rehabilitation centres, let us be certain of our facts and figures, in case the Government make further inquiries and discover the overstatement, bringing discredit on the whole scheme and possibly delaying the formation of these centres for some considerable time.—I am, etc.,

Liverpool, Jan. 11. W. J. EASTWOOD, M.Ch.(Orth.).

## Insulin for Local Sepsis

SIR,—No doubt Mr. Nevil Leyton will proceed to test the efficiency of insulin in the treatment of chronic local sepsis in a variety of ways, but I trust that if he adopts the suggestion made by Dr. R. D. Lawrence—namely, that "one half of the wound should be dressed with active insulin, the other with heated—and so inactivated—insulin solution"—he will be careful to satisfy himself that the insulin he uses is really inactivated. If he simply boils a therapeutic solution of insulin it is doubtful whether its activity will be destroyed. Cheadle autoclaved insulin at 125° C. for twenty minutes at *p*H 2 and found the loss of activity was 20 per cent., whilst at *p*H 4 the loss of activity was much greater. Ordinary insulin solution has a *p*H 3 to 3.5, and therefore just boiling the solution would probably reduce its activity by less than 50 per cent.

Although it appears unlikely that insulin can have any local action even when the sugar content of the skin is above the normal—a condition which may exist without hyperglycaemia—nevertheless it is far from impossible. A number of years ago an attempt was made in my wards to determine the relative efficiency of horse serum and weak lactic acid in chronic ulceration of the skin. Horse serum contains a substance which neutralizes the proteolytic ferment liberated by the leucocytes; lactic acid hinders the activity of the ferment, which works best in a slightly alkaline solution. I reluctantly came to the conclusion that horse serum was the more efficacious. Insulin is destroyed by this proteolytic ferment, but its destruction may be accompanied by fixation of the ferment. If insulin proves to be really beneficial the cost should not be prohibitive. Pure dry insulin can be produced at less than threepence per hundred units, and sterilization, standardization, and various other tests would not be necessary for a preparation for outward application.—I am, etc.,

London, W.1, Jan. 15. O. LEYTON.

## Lymphoid Tissue of the Alimentary Canal

SIR,—With reference to Mr. H. Gordon Thompson's recent article on the lymphatics of the alimentary canal (*Journal*, January 1, p. 7), it would be of interest to know whether there is any great increase in the number of cells migrating through the intestinal wall from other parts of the intestines at the same time as, or a short time after, the migration occurs from the appendix. If there were an increase, it would prove that such migration was not only a local defence reaction, but that either by direct connexion through the lymphatic system or by other intermediate means there was a protective stimulation. I, personally, do not expect this to be the case.

It would be interesting to decide by further experiments whether the lymphocytes secreted into the intestinal tract contain antitoxic or bacteriolytic ferments which they did not possess before the invasion of the appendix by pathogenic organisms. This could be proved by incubating the secretions of the appendix which contain lymphocytes before and after inoculation with different quantities of pathogenic organisms. If an increased autolysis of the bacteria or an increase in the antitoxic substances could be demonstrated, it would mean that we have in this lymphatic tissue a highly effective general intestinal defence mechanism. This would explain the value of oral vaccine therapy, and it would also explain why, after a certain time, toxic organisms in the intestines disappear from them, as in typhoid fever, though they are still present in other parts of the body. If one takes into account the much larger number of lymphocytes than that usually accepted secreted into the intestinal lumen, which was proved by the author, one can understand that such a general intestinal purifying action is possible from a comparatively small amount of lymphatic tissue. The reason why comparatively few lymphocytes are found on examination of the bowel contents is probably that these cells exert their destructive action by autolysis.—I am, etc.,

Bristol, Jan. 9. ERNST PHILIPP.

## Treatment of Pneumonia

SIR,—We have waited so long and patiently for a really satisfactory serum treatment for pneumonia that it was very depressing to learn from the leading article in the *Journal* of January 8 (p. 76) that another long wait may be before us whilst a new serum prepared from the blood of rabbits is being tested.

For this reason may I be allowed to break a silence that has lasted for eleven and a half years by referring to a treatment I introduced for pneumonia in a paper I was privileged to publish in this *Journal* (1926, **2**, 109) under the title of "The Thyroid and Manganese Treatment"? First, may I remark that the observations and results therein recorded came from the practices of four colleagues with whom I had been working, as well as my own, and that they represented what all of us had learnt from the first forty cases that underwent the treatment. It was with their knowledge and consent that the paper opened with these words: "How has it become possible to state categorically, and with no fear of contradiction, that ordinary pneumonia, unaccompanied by intercurrent affections or occurring at too advanced an age, is one of the easiest diseases to arrest and cure?" Now as this statement has remained uncontradicted since the day it was made and observers in New Zealand, Australia, and America have published evidence in support of the opinions they hold with regard to the treatment's specific action in all types of pneumonia, and as Dr. Max H. Weinberg of Pittsburg proved that a cerebrospinal fluid that was teeming with pneumococci in a moribund case of pneumococcus meningitis Type III became sterile after forty-eight hours' application of this treatment (*J. nerv. ment. Dis.*, 1931, **74**, 38), perhaps others may find some use for it while waiting for the serum treatment to arrive.—I am, etc.,

HERBERT W. NOTT, M.R.C.S., L.R.C.P.

Guildford, Jan. 10.

## Correct Footwear

SIR,—I have been following with interest the correspondence on correct footwear. It is indeed a field for preventive medicine. No one so far has complained about heels. I suppose the previous correspondents have never had to suffer from the sort of heel that is put on to "smart" women's shoes. High heels seriously impair that flexibility of movement which I believe is necessary to foot health. I suppose they were invented because raising the heel foreshortens the foot and makes it look smaller as well as giving the appearance of a higher instep. I believe a heel is a disadvantage rather than a necessity. I suffered from metatarsalgia and tried various kinds of shoes and pads without much benefit until I came across a firm which makes shoes without heels and with a straight inner border. These seem to me as anatomically correct as any shoe can be. Unfortunately

they are expensive, though, as Dr. Jordan says (*Journal*, January 8, p. 96), a correct shoe wears so much better than a "fashionable" one. In "ordinary" shoes one can get a straight inner border for children until they come to size 3. Then (I am thinking of girls) they come under the category of "ladies" and the big toe begins to be deflected outwards. Even canvas "gym" shoes have this fault. One cannot expect the manufacturers to supply a thing for which there is no demand. How does a sense of values change? How did it happen that people began to see "wasp" waists as ugly instead of desirable? How did the Chinese lose their admiration for bound feet? Can we not launch a campaign of articles in the popular press written by orthopaedic experts who could explain the necessity for a "change of heart" about feet? I believe the public look upon hallux valgus, corns, and other preventable troubles as evils that come "out of the blue" and have to be endured. I do not think they have any realization of their cause.—I am, etc.,

London, N.W.1, Jan. 10. DOROTHY E. MASON.

## The Problem of the Final M.B., B.S.Lond.

SIR,—The late Sherlock Holmes was reported (by an M.D.Lond.) to have said of the "agony" column of the *Times* that it amused without fatiguing the intelligence. Had he been spared how he would have enjoyed Dr. A. M. H. Gray's contributions to educational literature!—for instance, Dr. Gray on the economic problems of students (or their parents). Of course, officially speaking, the Board of the Faculty of Medicine has as much to do with the economics of the University and its students as with the economics of rearmament; but Dr. Gray on economics is quite good fun, and we are still near Christmas. Unless either the Colleges or the University will remit their fees (in whole or part) his plan will cost the students more. Of the 399 students who completed the second M.B. in 1926–7 and reached the *Medical Register*, 250 graduated M.B., B.S.; of the 149 who did not 86 never sat for the final M.B. at all, and so saved some fees. Of course if the University waived its fees there would be a saving. But a financially simpler way of reaching the result desired by Dr. Gray would be for the University to take over the whole profitable business of examining. Financially the tacit assumption that the Colleges must have a monopoly of licensing is naïve. When the Colleges established their joint board the University of London was what the Colleges still are, only an examining body, and the general educational level of London medical students was so low that but a small proportion even matriculated. Now a large proportion are undergraduates and the University is a teaching as well as examining body. Financially, by entering into direct competition the University could put the Conjoint Board out of business as effectively as the railway companies ruined the stage coach companies, and for much the same reason. The Conjoint diploma is a mere licence to practise; all who take it (save a few stalwarts who protest annually in Lincoln's Inn Fields) recognize it for what it is. A licence granted by the University of London, having the additional advantage of exempting the holder from some part of the final M.B., would be much more attractive. That purely financial argument can only be countered by sentimental or educational arguments.

So we may leave the kindergarten economics of Dr. Gray—with a humble tribute of admiration to his belief that "economic matters are of no interest to the Universities of Oxford and Cambridge." Indeed, before embarking on economics Dr. Gray should have consulted a senior relative who contributed to your columns some years ago—I will call him Dr. Gray, sen. The occasion was this. At present a large proportion of Cambridge medical students never graduate in medicine (about one-third), but practically all of them are graduates of their university. Sir Ernest Graham-Little wrote to you and suggested that Londoners who had passed the second M.B. might, on fulfilling minor conditions, be admitted to a degree equivalent to that of B.Sc. Professor Lovatt Evans, who knows almost as much about scientific standards as the Gray family, saw no scientific objection, and I (*mea culpa*) urged an economic advantage—namely, those (a small but not quite negligible proportion) who had to give up the medical course altogether might be helped by the possession of a degree. But Dr. Gray, sen., perceived what Professor Lovatt Evans and I had missed—the danger to the prestige of the B.Sc., the possibility, as he put it, that the new degree might come to be thought of as equivalent to Failed M.B., B.S. I am sure that this wise and witty veteran would have reminded young Dr. Gray of the poet who said that presbyter was but priest writ large, and would have warned him of the danger that M.B., B.S. might be thought of as M.R.C.S., L.R.C.P. written in four instead of eight letters. Young Dr. Gray should stick to educational arguments, to which I return.

It is an axiom that, *whenever possible*, the examining and the teaching body should be identical. My italics are the only answer Dr. Gray's boyish attempt to make mischief between "external" and "internal" sides deserves. The University is, in my opinion, competent to control *all* medical undergraduate teaching and examining done in London. If it *is* a fact that the 40 per cent. of our undergraduates who do not graduate in medicine are, educationally speaking, worthy to do so, it is the duty of the Senate so to rearrange its own examinations that these students do graduate, and to make that rearrangement without reference to the views of financially interested corporations. Dr. Gray and his friends urged the Senate to co-operate with Oxford and Cambridge in an educational inquiry; then they imposed on the teachers and administrative staff of the University the weary business of revising curricula and examinations in accordance with the findings of the joint investigation. Now they tell the Senate and the world that all this will make little or no difference to the proportion of students graduating and that a wholly different plan should be tried. Why was this advice not given three years ago? Is it possible that shrewder politicians than Dr. Gray are afraid that either the reform of the curriculum will be effective or that the absurdity of paying tribute for ever to two corporations will be realized by persons more powerful than any of us medical folk.—I am, etc.,

Loughton, Jan. 16. MAJOR GREENWOOD.

SIR,—Dr. A. M. H. Gray sees no connexion between my demonstration that the medical schools are increasingly restricting their admission of pupils to university students and my prediction of improvement in the number of students in those schools ultimately taking university degrees. I should have thought the connexion was too obvious to labour. This restriction, initiated by my own school, St. Mary's Hospital, has been in actual operation for less than two years, and yet figures for 1936–7, available only within the last few days, show that two-thirds of the students at London medical schools in that year were reading for a university degree and one-third for non-university qualifications, chiefly Conjoint Board.

When this restriction becomes universal, as it is destined rapidly to do, the competition from the Royal Colleges must automatically disappear, for the exclusively Conjoint student will no longer obtain admission to the medical schools. There can be no doubt that the Royal Colleges have seen the red light of danger from this recent development if Dr. Gray has not. Indeed, it is this threat which explains the present agitated efforts by the Colleges and their supporters to secure an agreement with London University which they hope would avert that exclusion before it becomes actually effective.

Six representatives of the Senate, of whom I am one, sit upon the Court. Had any such consideration as Dr. Gray quite unwarrantably suggests actuated the Court as that an improved entry should be secured by lowering the standard of the final M.B. it would have been the duty of the Senate representatives to protest, and they would not have failed to do so. No such implications can be read into the pronouncement by the Court. The revised regulations for the medical examination of the University, following upon the reform of the curriculum, are designed to make the degree more accessible and would most probably have that result without lowering its standard.

Dr. Gray does not seem to realize that the pious aspiration of the Faculty Board that "the standard of the degree must be firmly maintained" is incompatible with the actual proposition offered by the Board—namely, that the examination in medicine, surgery, and midwifery for the final M.B. (much the most important subjects of the whole curriculum) should in effect be conducted by the Conjoint Board on its present standard. I believe that the great majority of medical educationists would support the unanimous opinion expressed by the Haldane Commission, that the proposed arrangement (essentially the same then as now) would inevitably result in lowering the standard of university education in medicine, where such lowering is least desirable.

The issue raised by the present controversy is of vital importance, for it is to decide which body shall ultimately control medical education in London—the University of London or the Royal Colleges. Largely because of the economic position—namely, the impossibility of carrying out any adequate education of medical students without the aid of grants from the State—the medical schools in London, all of which now accept these grants, are increasingly under the obligation to maintain the university standard in their teaching. London University is alone among universities in being faced with the competition of the "relatively easy (Conjoint) qualification," the existence of which, as Dr. Gray quite properly points out, "affects materially the number who obtain a degree." How that position can be improved by consultation with the Royal Colleges seems difficult to explain. The Colleges cannot be expected to commit *felo de se*.

The rapidly growing importance of the medical profession in the modern State surely calls for the highest possible training of its members, especially university graduates, from whose ranks future teachers are so largely drawn. It would indeed be a disaster if London University, which has so proud a record as a pioneer in raising the standard of its medical examinations when the medical examinations of the other universities were deplorably low, should lead the way now in reducing the standard for its qualifying examination. Happily portents all point to another defeat of this retrograde proposition, so decisively defeated in the past.—I am, etc.,

London, W.1, Jan. 14. E. GRAHAM-LITTLE.

## Who Owns X-Ray Negatives?

SIR,—The literal reply to this regrettable heading—and at such a season!—is that many people do: for example, all radiologists, most hospitals, some radiographers, a few general and consultant medical practitioners, a number of industrial concerns, and those members of the general public who have purchased the negatives from radiographers, with the addition of hordes of patients who have been given them by their medical advisers.

If, as I suspect was the intention, the question is confined to *x*-ray negatives taken by or under the instructions of a radiologist, it has been adequately dealt with in the reasoned statement of Dr. Asten and in the United States cases quoted by you. To these, for the benefit of people who insist upon legal pronouncements, may be added at least one in the British Isles—in the case of de Cadiz *v.* Dr. O'Hea, April and June, 1931, when judgment was given for Dr. O'Hea, following the decision of Boucas *v.* Cooke (1903), 2 K.B., 227.

The more serious objection to the heading is that it does not cover the subject-matter, and the correspondence to date shows involvement of the following three questions, of which there is a simple and definite reply to the first only, and that appears to be the least important in the minds of the writers. (A) Who owns a radiologist's *x*-ray negatives? (B) What should he do with them? (C) What should be their ultimate fate?

(A) In my opinion it would be in the interests of all concerned if the B.M.A. would urge the medical profession to dispose permanently of this question by accepting the view, which is correct both morally and legally, that the negatives are the property of the radiologist, and by educating patients accordingly. It would then be established that a radiologist may retain or call for the return of negatives of a case of particular interest to him or of importance to the furtherance of radiological knowledge, and that he is consulted for the benefit of his experience and special knowledge of radiology, and not as a purveyor of "pictures."

(B) It follows that he should never give them to the patient, and I should be surprised to hear that this is in any way common practice. In my opinion he should give to the referring practitioner a report on his radiological findings, together with any advice which he considers pertinent, and such radiographs as are likely to amplify the report or assist in the diagnosis, prognosis, or treatment of the case. In most cases prints or copies are perfectly adequate for these purposes, and he will not expect them to be returned. If he sends the original negatives and asks for their return they should be returned, but if he does not ask for their return it may be presumed that he is relinquishing ownership. He should be prepared to send the original negatives on request, but not necessarily to allow unrestricted handling of special negatives. If the patient goes to the radiologist without informing his medical adviser the radiologist should stipulate that the name of a medical practitioner be given, with whom he may discuss the case and to whom he will send the report as above.

(C) The ultimate disposal of radiographs of which he has relinquished ownership is not in the province of the radiologist, but I feel that uniformity of procedure in this respect is desirable. The soundest method would appear to be for the patient's medical adviser to retain them with the notes of the case, and to transfer them when necessary to another medical practitioner—for example, if the case or the patient should leave his care—but as many medical practitioners permit or even encourage the

patients to demand the radiographs for themselves the inception of such a procedure as routine would present difficulties. I would strongly advise that the patient should not in any case be given possession of the radiographs while treatment of the injury or disease is still being carried out. One reason for this is the difficulty experienced by radiologists in obtaining previous films in "follow-up" cases, and there are other reasons which may affect the patient or the medical adviser, or both.

The above observations are not materially affected by the remarks of Mr. Fairbank (*Journal*, January 8, p. 92), who admits that he is treading on difficult ground, and whose letter applies to an even more restricted type of case than he suggests—namely, that in which the presence of fracture has been established. In the undiagnosed case of suspected injury to a bone or joint the radiologist's opinion may be of supreme importance, and even in the true fracture case his report should be of assistance to the clinician, and therefore of value to the patient. All fracture cases are not sent to surgeons, and all medical practitioners are not sufficiently conversant with radiographic appearances to dispense with advice additional to their personal interpretation thereof.

To those accustomed to them *x*-ray negatives afford more detailed information than do prints, but I consider that well-prepared and carefully selected and arranged prints, in conjunction with a reasoned radiological report, should be at least as helpful in most cases, and although I do not personally advocate routine prints of fractures they would probably be adequate for "follow-up" purposes. They are infinitely preferable to full-size films from the point of view of transport and storage, and have the added advantage that if they are destroyed or lost they are not irreplaceable, as are the original negatives.

I have indicated above that I sympathize with the medical practitioner who prefers to view the original negatives, and I should always fall in with his wishes in this matter, but the actual ownership of the negatives undoubtedly vests in the radiologist, and I cannot sympathize with the suggestion that in any circumstances the patient should be "entitled to *any and all* of the films that have been taken."—I am, etc.,

Worthing, Jan. 10. R. BOULTON MYLES.

SIR,—At the risk of incurring the displeasure of my radiological colleagues, I venture to support some of Mr. Fairbank's contentions (*Journal*, January 8, p. 92).

While I have always held that skiagrams without an expert's report are valueless, I have also always held the converse: that, if the radiologist himself requires skiagrams for the preparing of the report, then this report is useless unless the skiagrams accompany it. I hold therefore that skiagrams should always be furnished, with the report, to the medical man who has requested the *x*-ray examination.

I also accept the view that the skiagrams are only incidental to preparing an opinion and therefore are the property of the radiologist. He can therefore, if he wishes, insist on their return, but in special cases, such as when the patient is going to a distant part of the country or abroad, he will of course waive this right. In the patient's interest it would be best for the radiologist to keep the skiagrams, because both the doctor and the patient usually lose them and they are not available when a subsequent examination is required. In practice the radiologist will probably find it best not to insist on their return, and then the onus of the subsequent production of the old skiagram will be upon the medical practitioner, or on the patient if they have been given to him. The radiologist would of course keep a copy of his report indefinitely. I have been asked to produce skiagrams fifteen years after they were taken.

With regard to hospital practice, I always allow a medical practitioner to have the loan of skiagrams, provided they are returned to the hospital, but I make an exception if I think there is an attempt to exploit the hospital for medico-legal purposes.—I am, etc.,

London, W.1, Jan. 15. N. S. FINZI.

SIR,—Mr. H. A. T. Fairbank, in his letter in the *Journal* of January 8 (p. 92), appears to confuse a difficult and complicated question which in other respects was becoming reasonably clear as a result of the correspondence in your columns. We all know that an orthopaedic surgeon has sufficient knowledge of radiographic interpretation to read skiagrams of simple fracture cases, but I do not know why Mr. Fairbank finds it necessary to write at considerable length in order to point out that in this instance he considers a radiologist to be virtually a "glorified photographer." Every specialist of experience acquires a reasonable knowledge of the work carried out by those of his colleagues with whom he associates, and I am constantly called upon by medical practitioners, particularly in the country, to decide whether or not a bony injury requires the services of a surgeon. I do not think that Mr. Fairbank would be pleased if anyone referred to an orthopaedic surgeon as a "robot who put crooked bones straight." Recently an orthopaedic surgeon for whom I have a profound respect requested me to make my reports on all difficult cases as detailed as possible, remarking that "two brains are better than one," and I fully agree with this observation.

I always provide my colleagues with the evidence on which I base my report, and should a patient change his locality or seek other advice I think that every radiologist would be guided by common sense and courtesy in doing what was required of him. I do not propose to occupy your columns by repeating what has already been said on a number of occasions in a clear and able manner, but I do suggest that we adopt the decision which has been made in the American courts, and which has the support of the majority of radiologists in this country—namely, that *x*-ray films are the property of the radiologist.—I am, etc.,

Ipswich, Jan. 13. C. H. C. DALTON.

SIR,—So far as I know, the question of who owns an *x*-ray film has not yet arisen since the article to which you referred lately in an editorial footnote was written. Dr. W. Asten may, however, be interested in the American decisions enumerated by Dr. S. W. Donaldson in his book *The Roentgenologist in Court*.—I am, etc.,

London, E.C.4. D. HARCOURT KITCHIN.

*** Dr. Donaldson's book is reviewed on p. 174 of this issue.—ED., *B.M.J.*

## Applying for Hospital Posts

SIR,—The recent correspondence on this subject shows that the question of the method of election to hospital appointments, especially of the honorary staff, has only to be mentioned to reveal the numerous hardships the present system entails. Time-wasting and sore feet are the least disputed but possibly the least pernicious defects. It is also obvious that any system might fail to receive more than a minority unqualified approval, since the majority constitute the disappointed ones. Nevertheless it should not be beyond the intelligence and ingenuity of those who might be thought responsible to devise a system

of election less cumbersome and more equitable than the present one.

Whatever may have been one's experience, whether as candidate or elector, I think most truthful observers are agreed that there is often no rhyme or reason for what actually happens. It may be urged that a candidate has done no original work; or that he is such a good scientist that his clinical acumen is in doubt. His field of interest may be regarded as too generalized or too specialized. He may be lacking in personality, or have such an attractive one as to threaten other people's popularity. He may suffer, or be favoured, because of belonging to a certain hospital. Prejudice is not limited to the more obvious channels; thus I have heard Welshmen and Scotchmen spoken of disparagingly as such: an Australian was turned down without serious consideration—as if Gallipoli had never been; an English-born sunburnt applicant was excluded because of a suspicion that his melanin was a far back racial admixture—I subsequently heard that his father was a distinguished Army officer. Some physicians will not support an applicant in their own specialty—others will seek one in order to lighten their own hospital work. A man is often chosen because he will make a good colleague and "be easy to work with"; and yet this proves to be the case no more often than with a more independent-minded person. Many hospital staffs are divided up into cliques. For this very reason an applicant may stand a poor chance because the chief or group he has served does not belong to the "powerful group," or to those who concern themselves more energetically with elections. A candidate may fail to get on his own teaching hospital for one or more of the above reasons, or because there is no vacancy for his particular specialty at the time he is in a position to apply. It may be true that a good man will be stimulated to greater effort and will overcome all difficulties; but many good men will fall by the wayside and will be virtually lost. Others will become embittered and cynically materialistic. They may fail to make their contribution to scientific medicine or surgery because the most creative years of their life have been spent in uncertainty and insecurity, literally wandering from door to door, hospital to hospital; and gradually but insidiously their self-respect and spirit may become undermined.

In another direction Sir Arthur Hurst has recently drawn attention to the appalling lack of co-ordination among the various teaching hospitals in London; and Lord Dawson has also intimated a similar state of affairs in a wider circle. Surely many of the evils of hospital elections could be abolished by a London central election board; or perhaps by groups of hospitals associating together for staff appointments, as do the colleges at Oxford or Cambridge for scholarship purposes. Personal or personality difficulties are usually fantasies that disappear on closer acquaintance, and an interchange of men from different centres could not fail to revitalize and quicken the medical and scientific activity of all hospitals.—I am, etc.,

London, Jan. 7. INGENUOUS.

## Autophytic Dermatitis

SIR,—Some years ago in China I had as a patient a British schoolgirl, aged 13, who on several mornings had developed oval patches of moist dermatitis about the size of the top joint of her thumb or finger. They were all on the face, and a fresh one appeared each day. I took her into hospital, and after a few days instructed the nurses to keep away all irritants or disinfectants, but the patches still continued to appear and spread to the arms. They healed in two or three days.

After about two weeks I rubbed a piece of sterile gauze over a fresh patch, then rubbed a piece of healthy skin on her arm with the gauze, and sealed the part with gauze and adhesive plaster to prevent it from being touched. Next morning a similar patch of dermatitis appeared. I told the girl that the previous patches must have been self-inflicted, whether intentionally or in her sleep, and that they must now cease. They did cease, and she went back to school life. She had the reputation of trying to get out of school work.—I am, etc.,

Worthing, Jan. 13 FRED H. JUDD.

## Cataract Extraction during Narcosis

SIR,—I am grateful to Mr. Basil Graves for the elucidation of many points raised in my letter. Referring to his remarks (*Journal*, December 25, p. 1303) concerning scopolamine and morphine, I cannot recall any cases of cataract in which their use produced vomiting. As regards psychical disturbance, it occasionally occurs irrespective of any narcotic influence: I am doubtful of its greater frequency after the use of scopolamine and morphine. Of course there is hardly a drug to which some patient or other will not react in an unexpected way.

What stands out from the correspondence is that as an alternative to scopolamine and morphine paraldehyde is a well-tried, efficient narcotic which could be administered either by mouth or per rectum in most cases without fear of any harm arising to the patient therefrom.—I am, etc.,

Eastbourne, Jan. 15. D. V. GIRI.

## Treatment of the Common Cold

SIR,—I was most interested to read Dr. Elyan's experiences in the treatment of the common cold with prontosil (January 15, p. 146). The results he obtains closely resemble those that I am in the habit of obtaining with bicarbonate of soda—one heaped teaspoonful in a half-pint tumbler of hot water, morning, noon, and night for a minimum of twenty-four hours and a maximum of seventy-two. For children, half that quantity.—I am, etc.,

Jan. 16. SURGEON COMMANDER R.N

## Large Lipoma simulating Goitre

SIR,—I enclose a photograph which if reproduced may be of interest to readers of the *British Medical Journal*. It shows a lipoma of the space of Burns which simulated a pendulous goitre in a single lady 53 years of age. It will be noticed that the resemblance to a goitre was very close. The large rounded lipoma was removed by a curved incision over the upper part of the sternum.—I am, etc.,

Wanganui, New Zealand, Nov. 17, 1937. H. KENRICK CHRISTIE, Ch.M., F.R.C.S.

An investigation to determine the relative values of raw and pasteurized milk, produced under typical commercial conditions, has revealed no significant differences in the nutritive value of the two products. The feeding experiments were carried out on calves. The investigation, conducted at the Hannah Dairy Research Institute, Ayrshire, is described in the current issue of the *Journal of Dairy Research*.

# Obituary

News comes from Zululand of the sudden death on December 5, 1937, of Dr. DOUGLAS GARNETT STOUTE, district surgeon for Mtunzini and medical officer to the Amatikulu Leper Institute. He had been playing in a local cricket match at Eshowe, and after scoring 66 not out collapsed. The weather was intensely hot, and the game followed a period of strenuous work and long distances of travel. Dr. Stoute was 47 years of age, and graduated M.B., Ch.B. of Edinburgh University in 1916. During the war he served in Salonika, was mentioned in dispatches, and retired with the rank of major, R.A.M.C. He went to Zululand shortly after the war, and soon began to interest himself in social organizations on the Natal coast, particularly sporting bodies. He was chairman and president of various societies, and his practice extended from Mtunzini to Tugela. He leaves a widow and a son.

Dr. ROBERT CROSS, who had practised at Mapplewell, near Barnsley in Yorkshire, for thirty-four years, died on December 27, 1937, not many months after retirement from active work. Born in County Tyrone, Ireland, in 1864, he obtained the L.R.C.S.I. in 1884 and the L.R.C.P. Ed. in 1887. Dr. Cross was well known and much respected throughout the neighbourhood, and especially by the colliery workers of the village, whose "pit doctor" he had been for many years. When any accident occurred at the colliery Dr. Cross was always to be found in attendance on the injured. In September last he received a presentation case of cutlery and an appreciation on vellum from the inhabitants of Mapplewell and Staincross in acknowledgment of his long and faithful service to the community. He had been a member of the Barnsley Division of the British Medical Association for the past thirty years.

Dr. WALTER HOLCROFT CAM, who died last month at the age of 54, was the son of the late Rev. W. H. Cam of Oxford, and from Marlborough went to study medicine at Gonville and Caius College, Cambridge, taking his B.A. with first-class honours in the Natural Sciences Tripos of 1905 after holding an exhibition and a scholarship. At the London Hospital he won the Anderson prize for clinical medicine, and having qualified M.R.C.S., L.R.C.P. in 1909 served as house-surgeon there. He obtained the M.B. and B.Ch. degrees in 1912. During the war he was a battalion medical officer with a temporary commission in the R.A.M.C., and later joined the Royal Flying Corps. In 1921 he began practice at Ross in Herefordshire, and became a member of the honorary medical staff of the Ross and District Hospital. He was also for a time assistant surgeon to the Savernake Hospital, and medical officer of health and inspector of schools for the Marlborough urban district. Dr. Cam was chairman of the Hereford Division of the British Medical Association in 1930–1, and had been president of the Hereford Medical Society. His death from pneumonia is deplored by a large circle of patients and friends who held him in the highest esteem.

By the death of Dr. WILLIAM L. M. GABRIEL on December 30, 1937, the county of Northumberland has lost a loyal and devoted servant and the Territorial Forces a very enthusiastic officer. He was born at Keighley in Yorkshire forty-six years ago, and was a student at Leeds University at the outbreak of the great war. In August, 1914, he accepted a commission in the 2nd West Yorkshire Regiment (P.W.O.) as a combatant officer, and went to France with the 2nd Battalion early in 1915. A few months later he was badly wounded at Aubers Ridge and was returned to England for convalescence. He then completed his medical studies at Leeds University, and graduated M.B., Ch.B., with second-class honours, in 1917. For a little time he was resident medical officer at the Leeds Public Dispensary, and in 1918 he took a commission in the R.A.M.C. Special Reserve, and for some time was medical officer in charge of the Royal Army Ordnance Department at Chilwell, Notts. From 1923 to 1933 he was medical officer attached to the Tynemouth Heavy Brigade, and he also served with the 149th Field Ambulance Brigade, succeeding to the command of this unit two years ago, representing it at the Coronation last year, when he received the Territorial Decoration for efficiency. In 1920 he was appointed an assistant medical officer under the Northumberland County Council, and remained in its service until his death, acting as medical officer of health for the Gosforth Urban District Council since 1932. In 1933 he obtained the D.P.H. and B.Hy. of Durham University. At the time of his death he had just resigned the last appointment to take over the duties of senior assistant county medical officer of health. "W. F. J. W." writes: Tall and of commanding appearance, with a deep baritone voice and good manners, Gabriel was a charming companion, with what appeared to be a bright future in front of him. He leaves a widow and one small son to mourn his loss. By his own express desire he was cremated, but a memorial service, held in Holy Saviour's Church at Tynemouth on January 3, was crowded, representatives being present from every department of the Northumberland County Council, the Gosforth Urban District Council, Tynemouth Corporation, Newcastle City Council, the British Medical Association, the Society of Medical Officers of Health, and the Reserve Forces Lodge of Freemasons. *Requiescat in pace.*

Dr. ADOLPHUS VAUGHAN BERNAYS, who died on January 8, aged 80, joined the British Medical Association as long ago as 1884, and had practised for many years at Solihull in Warwickshire. His father, the Rev. L. J. Bernays, rector of Stanmore, sent him to Cambridge; he graduated B.A. in 1880, and continued his medical study at St. Thomas's Hospital, taking the M.B. in 1882 and the M.R.C.S. in the following year. He then put up his plate in Solihull, and gradually acquired a large practice, which in more recent times became a partnership of seven. Dr. Bernays was the friend and confidant of generations of patients and took a prominent part in the public life of the neighbourhood. He was a Justice of the Peace, chairman of the Education Committee of the Warwickshire County Council, bailiff of the Governors of King Edward's School, Birmingham, and an alderman of the city of Birmingham.

We regret to announce that Dr. DAVID MALCOLMSON BARCROFT of the Glen, Newry, Co. Down, died on January 13. He was formerly well known as a general practitioner in the west of London, and had been president of the Chelsea Clinical Society. A son of the late Henry Barcroft, D.L., of Newry, he was born in 1875, his elder brother being Sir Joseph Barcroft, F.R.S., lately professor of physiology in the University of Cambridge. David Barcroft studied medicine at the University of Edinburgh, graduating M.B., Ch.B. in 1907 and taking his M.D., with commendation, in 1912. While at Edinburgh he was president of the Royal Medical Society and resident physician at the Royal Hospital for Sick Children. In London he held for some time the appointments of physician to the Margaret Street Hospital for Consumption, and honorary physician to St. Vincent's Cripples Home at Pinner and St. David's Home for Disabled Soldiers and Sailors at Ealing. He was much interested in the treatment of pulmonary tuberculosis, and contributed papers on tuberculin dispensaries and on the administration of tuberculin to the *British Journal of Tuberculosis.*

The following well-known foreign medical men have recently died: Dr. WERNER KÖRTE, for many years surgical director of the Urban Hospital, Berlin, and president of the Central Committee for Postgraduate Instruction in

Prussia, aged 84; Professor OTTO KRON, senior physician to the department for cutaneous and sexual disease of the Municipal Hospital, Vienna, aged 61; Dr. MANUEL A. SANTAS, formerly professor of paediatrics at the Buenos Aires Faculty of Medicine; Professor JOSEF LANGE, an eminent paediatrician of the German University of Prague; Professor ARTHUR THOST of Hamburg, a pioneer in otology and laryngology, aged 83; Dr. PAUL ERNST, formerly professor of morbid anatomy at Heidelberg; and Geh. Sanitätsrat Dr. ALFONS STANDER, for many years co-editor of the *Münchener medizinsche Wochenschrift*.

EMMET RIXFORD, former president of the American Surgical Association, died in the Peter Bent Brigham Hospital, Boston, on January 2, aged 72. An enthusiastic hiker, one of the peaks of the Sierra range in California is named Mount Rixford in his honour.

# Universities and Colleges

## UNIVERSITY OF LONDON

A course of lectures and clinical instruction on mental deficiency and allied conditions, arranged by the University Extension and Tutorial Classes Council in co-operation with the Central Association for Mental Welfare, will be given from Monday, March 28, to Saturday, April 9. It will be based on the requirements for the University of London Postgraduate Diploma in Psychological Medicine, and is intended for medical practitioners, more especially those who are engaged as school medical officers, certifying officers to local authorities under the Mental Deficiency Acts, or as medical officers of institutions, or who are otherwise definitely concerned with the care of subnormal or abnormal persons. The course has been reorganized and Part I has been extended to a fortnight in order that considerable time may be given to practice in mental testing under the supervision of a psychologist. Part II of the course, devoted to the problems connected with the retarded and difficult child, formerly held immediately after Part I, will this year be held in the autumn. All lectures will be delivered at the Senate House of the University, W.C., unless otherwise stated on the students' time-tables, and will be given from 10 to 12.30 each morning, with some late afternoon lectures from 5 to 6. The clinical work will be arranged for each afternoon, except Saturday, approximately from 2 to 4 (later in the case of visits to homes and institutions). Detailed time-tables will be sent to each person proposing to attend the course not later than March 21, and forms of application should be filled in and returned by March 7. The University will grant certificates of attendance to those students who attend regularly taking both theoretical and practical work. The registration fee, to be paid at the time of application, is 10s. 6d., and the fee for Part I of the course is £5 15s. 6d. All communications should be addressed to Miss Evelyn Fox, C.B.E., c/o University Extension Department, Senate House, University of London, W.C.1.

Mr. Philip Geoffrey Scott, B.Chir., F.R.C.S., chief assistant in the aural department of St. Bartholomew's Hospital, has been reappointed to the Geoffrey E. Duveen Travelling Studentship in Oto-rhino-laryngology for a further year (1938).

The following candidates have been approved:

M.D.—*Branch I (Medicine)*: J. Apley, C. G. Baker, Jean M. Cass, Lynette Dowsett, E. A. Hardy, G. W. Hearn, C. A. Lillicrap, W. N. Mann, S. K. Squires, R. J. Vakil. *Branch II (Pathology)*: D. G. ff. Edward. *Branch IV (Midwifery and Diseases of Women)*: T. L. S. Baynes, P. I. Boyd (University Medal), Anne A. Craig. *Branch V (Hygiene)*: M. Sendak (University Medal).

## UNIVERSITY OF MANCHESTER

The Council has approved the appointment of Dr. James Dawson as assistant lecturer in pathology.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND

A quarterly meeting of the Council was held on January 13, with the President, Sir Cuthbert Wallace, Bt., in the chair.

The Hallett Prize, awarded on the result of the Primary Examination for the F.R.C.S., was granted to Bertram Alfred Edward Johns of the University of Birmingham.

It was reported that at the recent Primary F.R.C.S. examination held in New Zealand seven candidates out of fourteen were successful in passing the examination.

Mr. Hugh Lett was appointed the representative of the College on the Council of Queen's Institute of District Nursing. Mr. W. Sampson Handley was appointed Hunterian Orator for 1939; Professor R. E. Kelly, Bradshaw Lecturer for 1938; and Sir Humphry Rolleston, Thomas Vicary Lecturer for 1938. Mr. William Frederick Davis was appointed Assistant Secretary to the College.

*Diplomas*

A Diploma of Membership was granted to David Allan Richmond of the University of Manchester.

The following diplomas were granted jointly with the Royal College of Physicians:

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—T. J. K. Brownlees, D. F. Buckle, J. P. Child, H. B. Craigie, A. G. Crisp, H. Fischgold, W. H. Fraser, Gertrude M. Jefferson, J. Littlewood, K. O. Milner, J. D. Richardson, P. H. Sandifer, M. Singh, Pauline W. M. C. Stirling, F. H. Taylor, J. C. S. Thomas, J. Walsh.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—A. S. de B. Cocks, G. S. Dhillon, G. A. M. Knight, H. P. Lawson, G. Phillips.

Diplomas in Anaesthetics were granted, under the special conditions of the Regulations, jointly with the Royal College of Physicians to the following candidates:

W. E. Brown, A. H Diamond, H. Hunter, Kathleen M. Lyon, Kathleen L. Oldham, E. S. Rowbotham.

The following hospitals were recognized for the six months' surgical practice required of candidates for the final Fellowship: Royal Hospital, Richmond (resident medical officer and senior house-surgeon); St. John's Hospital, Lewisham (resident surgical officer and house-surgeon).

## SOCIETY OF APOTHECARIES OF LONDON

The Court of the Society has awarded the Gillson Scholarship in Pathology for 1938 to Dr. R. H. S. Thompson of the Rockefeller Institute Hospital.

# The Services

## THE ARMY DENTAL CORPS

The War Office invites applications from dental surgeons for appointment to a limited number of commissions in the Army Dental Corps. Candidates will be selected for these commissions without undergoing competitive examination, but will be required to present themselves in London for interview and physical examination. They must be registered under the Dentists Acts or Medical Acts, and be not over the age of 28 years. Successful candidates will, in the first instance, be given short-service commissions for six years, at the end of which period they will retire with a gratuity of £1,000 unless they have been granted permanent commissions. Full particulars and forms of application may be obtained from the Director, Army Dental Service, the War Office, London, S.W.1.

The third International Congress for Microbiology will be held at the Waldorf-Astoria Hotel, New York City, September 2–9, 1939, under the auspices of the International Association of Microbiologists. It will be composed of the following nine sections: general biology, variation and taxonomy; general biology, microbiological chemistry and physiology; viruses and viral diseases; rickettsiae and rickettsial diseases; protozoology and parasitology; fungi and fungous diseases; medical and veterinary bacteriology; agricultural and industrial microbiology; immunology. The general secretary is Dr. M. H. Dawson, College of Physicians and Surgeons, 620, West 168th Street, New York City. The registration fee is $5.00, which does not include the cost of a banquet ticket or a copy of the *Proceedings*. A World's Fair will be held in New York City during the summer of 1939, and those who wish to attend the Congress for Microbiology should therefore make plans promptly. The American Express Company has been appointed official travel agency. The honorary secretary of the National Committee for Great Britain and Northern Ireland is Dr R. St. John-Brooks, Lister Institute, Chelsea Bridge Road, London, S.W.1.

No. 1

# INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended January 8, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

*Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for*: (a) The 125 great towns (i) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns (ii) in Eire. (e) The 10 principal towns (iii) in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

| Disease | 1938 | | | | | 1937 (Corresponding Week) | | | | | 1928-36 (Median Value Corresponding Weeks) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) | (a) | (b) |
| Cerebrospinal fever | 37 | 5 | 12 | — | 3 | 33 | 3 | 6 | 1 | — | | |
| Deaths | | 1 | 1 | | | | 3 | 3 | | | | |
| Diphtheria | 1,584 | 149 | 234 | 85 | 43 | 1,353 | 179 | 203 | 42 | 66 | 1,255 | 180 |
| Deaths | 49 | 8 | 10 | 5 | — | 44 | 5 | | 3 | 4 | | |
| Dysentery | 256 | 58 | 126 | | 4 | 16 | 7 | 11 | | — | | |
| Deaths | | | | — | — | | | | — | — | | |
| Encephalitis lethargica, acute | 3 | — | 1 | | — | 3 | — | — | | — | | |
| Deaths | | 2 | | | | | — | — | | | | |
| Enteric (typhoid and paratyphoid) fever | 24 | 10 | 5 | 10 | 2 | 18 | 3 | 4 | 4 | 5 | 23 | — |
| Deaths | 8 | 1 | — | — | — | 1 | 1 | — | — | — | | |
| Erysipelas | | | 98 | 5 | 6 | | | 57 | 6 | 13 | | |
| Deaths | | 1 | | | | | 2 | | | | | |
| Infective enteritis or diarrhoea under 2 years | | | | | | | | | | | | |
| Deaths | 64 | 19 | 19 | 4 | 4 | 52 | 15 | 11 | 10 | 3 | | |
| Measles | | | 911 | | 594* | | | 21 | | 1 | | |
| Deaths | 36 | 5 | 14 | 3 | 11 | 7 | — | — | 2 | — | | |
| Ophthalmia neonatorum | 112 | 4 | 32 | | — | 74 | 7 | 24 | | 1 | | |
| Deaths | | | | | | | | | | | | |
| Pneumonia, influenzal§ | 1,624 | 155 | 26 | 3 | 15 | 1,542 | 289 | 68 | 1 | 22 | 1,911 | 263 |
| Deaths (from Influenza) | 77 | 7 | 11 | — | 3 | 325 | 128 | | — | 5 | | |
| Pneumonia, primary | | | 377 | 8 | | | | 249 | 9 | | | |
| Deaths | | 28 | | 19 | 29 | | 49 | | 36 | 18 | | |
| Polio-encephalitis, acute | 2 | 1 | | | | — | — | | | | | |
| Deaths | | | | | | | — | | | | | |
| Poliomyelitis, acute | 5 | — | — | — | — | 2 | — | — | 1 | — | | |
| Deaths | | | | | | | — | | | | | |
| Puerperal fever | † | 2 | 13 | 3 | 2 | 46 | 9 | 16 | 3 | 2 | | |
| Deaths | | — | | | | | 2‡ | | | | | |
| Puerperal pyrexia | 190 | 26 | 30 | | 7 | 150 | 24 | 18 | | 5 | | |
| Deaths | | | | | | | | | | | | |
| Relapsing fever | — | — | | | — | — | — | — | | — | | |
| Deaths | | | | | | | | — | | | | |
| Scarlet fever | 2,139 | 141 | 518 | 104 | 94 | 1,933 | 226 | 346 | 99 | 72 | 1,999 | 265 |
| Deaths | 5 | 1 | 2 | — | — | 6 | — | 1 | 3 | — | | |
| Small-pox | — | — | — | | — | — | — | — | | — | | |
| Deaths | | — | | — | — | — | — | — | — | — | | |
| Typhus fever | — | — | — | | — | — | — | — | | — | | |
| Deaths | | | | — | — | — | — | — | — | — | | |
| Whooping-cough | | | 24 | | 10 | | | 136 | | 15 | | |
| Deaths | 20 | 4 | 1 | 1 | 1 | 28 | 7 | 9 | 5 | — | | |
| Deaths (0-1 year) | 514 | 93 | 106 | 27 | 45 | 487 | 125 | 94 | 54 | 27 | | |
| Infant mortality rate (per 1,000 live births) | 86 | 77 | | | | 78 | 103 | | | | | |
| Deaths (excluding stillbirths) | 6,279 | 1,274 | 1,076 | 215 | 206 | 6,808 | 1,771 | 736 | 287 | 192 | | |
| Annual death rate (per 1,000 persons living) | 15.5 | 16.0 | 20.1 | 14.5 | 18.3 | 17.0 | 22.1 | 15.1 | 19.9 | 18.4 | | |
| Live births | 7,137 | 1,297 | 1,006 | 330 | 248 | 6,593 | 1,293 | 861 | 321 | 246 | | |
| Annual rate per 1,000 persons living | 17.6 | 16.3 | 20.6 | 22.3 | 22.0 | 16.4 | 16.1 | 17.7 | 22.3 | 23.5 | | |
| Stillbirths | 275 | 52 | | | | 302 | 44 | | | | | |
| Rate per 1,000 total births (including stillborn) | 37 | 39 | | | | 44 | 33 | | | | | |

(i) 122 great towns in 1937
(ii) 12 „ „ „
(iii) 9 „ „ „

* 592 cases in Belfast alone.
† All cases notified as puerperal pyrexia after October 1, 1937.

‡ Deaths from puerperal sepsis.
§ Includes primary form in figures for England and Wales and London (administrative county), Northern Ireland.

# EPIDEMIOLOGY NOTES

## Diphtheria

Diphtheria notifications in England and Wales continue to increase each week; those for the week under review are appreciably greater than those in the corresponding week last year and very much greater than the median value for the last nine years. It is not possible to ascertain what proportion of the cases notified are suffering from clinical diphtheria. When diphtheria is prevalent in an area swabs are taken of the throat and nose in the presence of infections other than diphtheria, and the accidental finding of the organism usually leads to notification as diphtheria, although it may have no relation to the primary disease. During periods of epidemic prevalence of diphtheria the proportion of carriers to cases may be 4 to 1, or even higher, and the presence of carriers in a well-immunized community is common; thereby the specific immunity index of the population is maintained. The discovery of persons harbouring diphtheria organisms among selected groups, such as hospital wards, may have little significance other than that the organism is prevalent in the community. The number of carriers reported may be higher than the actual numbers, as a virulence test for the organism is not invariably applied.

In the last fortnight there were 21 cases of diphtheria, which included six nurses and one ward sister, in the King Edward VII Hospital, Windsor, but no fresh cases were reported after January 13. Three out of five wards were placed temporarily in quarantine, and the children's ward is to remain in quarantine for another week. Five cases of diphtheria have been reported among the domestic staff of the Throat, Nose, and Ear Hospital, Golden Square, London, but patients were not affected. Admission of fresh cases to the wards has been suspended temporarily, but the out-patient department was kept open. A small outbreak affecting four patients was reported last week in the children's ward of the Chesterfield Royal Infirmary. In each instance the measures taken to control the outbreaks appear to have been successful, but the admission of fresh carriers may be expected unless swabs are taken before admission.

## Dysentery

The fall in dysentery notifications in England and Wales recorded last week as compared with the previous week has not been maintained. It is possible that the low figures recorded last week were in some measure artificial, due partly to a tendency during the holiday period to postpone notification, and partly to delay in obtaining the reports from outlying districts. The reason to believe that dysentery is still widely prevalent is that because of its mildness it resists the measures usually taken for its control and has acquired the explosive character associated with food poisoning. The outbreak at Bedford last week exemplifies this character well; 70 persons were affected in one day with an attack of Sonne dysentery from a source which has been traced to milk taken from one farm on the outskirts of the town. Pasteurization of the milk supply has been promptly applied and no further cases have been reported.

Although dysentery has only recently been much in the public eye, the present widespread prevalence of the disease, which is not limited to this country but is found also in Germany, Denmark, Norway, Sweden, and Italy, dates from the middle of last year. During the early part of 1937 there was no unusual increase in dysentery in this country. The number of cases notified for the second half of the year shows for the week ending July 3 a total of 35 cases in England and Wales, of which 22 occurred at Walthamstow. For the next two months weekly notifications for England and Wales ranged from 10 to 25. There was a large increase for the week ending September 4 to 154, of which 152 were in Luton: cases here in the subsequent three weeks caused the returns for the country to be higher than usual. The next outbreak was one of 18 cases in Bilston, Staffordshire, in the week ending October 23. The notifications for England and Wales for the week ending November 6 were 117, this increase being due largely to 43 cases in Farnham, Surrey. Other parts of Surrey were affected in the following week, when 109 cases altogether were notified. London had had on an average less than ten cases each week, but from the middle of September for a few weeks the incidence rose to an average of 20. In the week ending November 20 69 cases were notified. More cases occurred in the following week, and in the week ending December 4 the number of notifications rose to 124. Over 100 cases were notified in each of the next two weeks over a wide area, 25 of the 29 metropolitan boroughs being affected. There was a fall in the week ending December 25, followed by a slight rise in the next week. Concurrently with the rise in the incidence in London in the week ending November 20 there was a rapid rise in the notifications from the rest of the country, when 226 cases were notified. Of the counties, Surrey had the largest number with 43, many of these being at Carshalton. Cases were also notified from Essex, Middlesex, and Kent, from Devon and Dorset, and in some of the large towns such as Birmingham and Sheffield. The 256 cases notified in the country apart from London in the week ending November 27 followed much the same distribution, though Dorset was more heavily affected by reason of 28 cases in Dorchester; during the same period 25 cases were notified from Pewsey, Wiltshire. The incidence of the infection was still greater in these districts in the next week, when a total of 453 cases were notified (of which 124 were in London). The disease appeared in Norfolk, West Sussex, and North Riding for the first time; the Norfolk cases were limited to Norwich and the Yorkshire cases to Easingwold. The week ending December 10 showed the peak of notifications received from the country (excluding London). There had been cases in most of the towns lying to the north of London, the incidence being heaviest in Enfield. Essex in this week continued to receive notifications from Southend, Brentford, and Billericay, while East Sussex recorded 19 cases, of which 13 occurred at Cuckfield. There was a fall in the incidence for the country in the next week, when an interesting contrast was shown in the returns. Devon's 42 cases were scattered throughout 15 districts, while of the 22 in the county of Nottingham 21 were notified from Nottingham itself. There was a further rapid decline in the following week, in which 270 cases were notified, 71 of these occurring in London, while in the last week of the year there were 247 notifications, of which 77 were in London. The notifications of dysentery probably do not provide an exact guide of the true incidence of the disease at all times. After the first case, or perhaps cases, have been proved, whether in an institution or an area, increasing attention is paid to intestinal disorders and a high proportion of cases will be recognized and notified; on the other hand, when the disease remains sporadic many cases are probably completely missed. It is perhaps significant that in non-epidemic times most of the notifications are received from the larger boroughs, such as Newcastle, Liverpool, and London, and it is possible that the heavy incidence in the Home Counties is directly related to notifications from foreign countries. Some importation undoubtedly took place after the war, on the return of troops from Gallipoli, Salonika, Mesopotamia, and Palestine, and even from Flanders. The Flexner organism was the most common strain during the post-war period, but it appears to have been less common in recent years, being replaced by the Sonne variant, which was first identified during the war.

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At a recent meeting of the Franco-German Society in Hamburg Professor Mühlens, the director of the Hamburg Institute for Tropical Diseases, presented the Bernhard Nocht medal to Dr. Fourneau of the Pasteur Institute of Paris.

## VITAL STATISTICS, ENGLAND AND WALES, 1937

We are indebted to the Registrar-General for the following statement regarding the provisional birth rates and death rates, and the rates of infantile mortality, in England and Wales and in certain parts of the country during 1937. The statement is issued for the information of medical officers of health.

ENGLAND AND WALES

*Birth Rate, Death Rate, and Infant Mortality for the Year 1937*
*(Provisional Figures)*

| | Rate per 1,000 Resident Population | | Deaths under 1 year per 1,000 Registered Live Births |
|---|---|---|---|
| | Live Births | Deaths (Crude Rates) | |
| England and Wales .. .. | 14.9 | 12.4 | 58 |
| 125 county boroughs and great towns, including London .. | 14.9 | 12.5 | 62 |
| 148 smaller towns with estimated resident populations of from 25,000 to 50,000 at the 1931 Census .. .. .. | 15.3 | 11.9 | 55 |
| London (administrative county) | 13.3 | 12.3 | 60 |

*Note.*—The birth and death rates for England and Wales as a whole are calculated on the estimated mid-1937 population, but those for the towns' aggregates and for London are calculated on the estimated mid-1936 populations.

The birth rate for 1937 is 0.1 above that for 1936, 0.2 above that for 1935, and 0.5 above that for 1933, the lowest recorded.

The crude death rate is the highest recorded since 1929, and is 0.3 above that for 1936, an increase which is largely associated with the heavy influenza mortality of the first quarter of the year.

The infant mortality is 1 below that of 1936, and only 1 above that of 1935, the lowest recorded.

# Medical News

The Wandsworth Division of the British Medical Association and the London Panel Committee have arranged a meeting, to which all insurance medical practitioners in the London area are invited, to be held at Wandsworth Town Hall on Tuesday, February 1, at 9 p.m., when Dr. H. Guy Dain will give an address on "How Far has National Health Insurance Practice become More Exacting?"

The Marylebone Division of the British Medical Association has arranged a meeting, to be held at the Medical Society of London, 11, Chandos Street, W., on Wednesday, January 26, at 8.30 p.m., when Dr. Charles Hill, Deputy Secretary of the Association, will open a discussion on "The Osteopath and State Registration," and will be followed by Sir Robert Stanton Woods, Dr. C. B. Heald, Dr. Kelman Macdonald, and Dr. N. J. Macdonald. All interested are invited to attend.

A business meeting of the Association of Industrial Medical Officers will be held at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Friday, January 28, at 5 p.m. At 6 p.m. Dr. S. W. Fisher, H.M. Medical Inspector of Mines, will speak on "The Health of the Coal Miner." The discussion will be opened by Dr. A. J. Amor. A demonstration of radiology and pneumoconiosis will be given by Drs. S. W. Fisher, A. J. Amor, E. R. A. Merewether, C. L. Sutherland, and A. Meiklejohn. The dinner of the association will be held at 8 p.m. On Saturday, January 29, at 10 a.m., there will be a visit to the Home Office Industrial Museum, Horseferry Road, S.W.

A meeting of the Medical Section of the British Psychological Society will be held at the Pharmaceutical Society of Great Britain, 17, Bloomsbury Square, W.C., on Wednesday, January 26, at 8.30 p.m., when a paper will be delivered by Professor J. E. Marcault on "Relationship of Consciousness and the Functional Activities of the Organism."

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, January 27, at 8.30 p.m., when a paper will be read by Major D. P. Lambert, I.M.S., on "Some Aspects of Medico-Legal Work in India."

The Association of Clinical Pathologists has arranged a scientific meeting, to be held in London at St. George's Hospital on Saturday, January 29, at 9.30 a.m. The annual general meeting of the Association will be held after the tea interval.

A quarterly court of the directors of the Society for Relief of Widows and Orphans of Medical Men was held on January 5, with Mr. V. Warren Low, president, in the chair. Two new members were elected and the death of one was reported. A sum of £2,183 15s. 5d. was voted for the payment of the half-yearly grants to the sixty-one widows and five orphans in receipt of relief. Three special grants of 50 guineas per annum were made to three orphans who had reached the age of 16, when ordinary grants cease, to enable them to continue their education. A first application for relief was received from the widow of a deceased member, and she was voted £50 per annum from the ordinary funds and £25 per annum from the Brickwell Fund. A further legacy of £167 16s. 3d. has been received from the executors of the late George Cattlin, bringing the total amount received from this source up to £4,242 19s. 7d. As the society celebrates the 150th anniversary of its foundation this year it was decided to hold a dinner on October 29, to which all members should be invited, together with distinguished guests. The details of the function will be further discussed at the April meeting of the court. A cordial vote of thanks was passed to Dr. Morland, who, owing to increased pressure of work, has resigned the chairmanship of the propaganda subcommittee. Dr. Morland has done strenuous work in endeavouring to obtain new members. He pointed out that at least twelve new members should be elected every year to keep the membership at its present total. Membership of the society is open to any registered medical man who, at the time of his election, is residing within a twenty-mile radius of Charing Cross. Relief is only granted to widows and orphans of deceased members. Full particulars may be obtained from the secretary of the society, 11, Chandos Street, Cavendish Square, London, W.1.

The *Archives de Médecine des Enfants*, edited by the veteran paediatrist, Dr. Jules Comby, assisted by his daughter, Dr. Marie-Thérèse Comby, has just completed its fortieth year of publication. An interesting history of its career is given by the editor in the January issue.

The Press Association was informed at the offices of Mr. E. R. Kisch, a London solicitor, on January 13, that he had issued a writ that day on behalf of a Croydon resident, claiming damages from the Croydon Corporation. The claimant alleges negligence and breach of statutory duty in connexion with the typhoid epidemic.

Between 1903 and 1916 the American Medical Association regularly published summaries of the fireworks injuries sustained on each Fourth of July, which is a legal holiday in every State of the United States. In 1916—the first year without a single case of tetanus—these reports were discontinued for twenty-one years. Last year the *Journal of the American Medical Association* (November 27, 1937) again took up the story with a summary of the 1937 Fourth of July casualties, reporting twenty deaths and two cases of tetanus which recovered. The total number of injuries was 7,205, a figure which admittedly errs on the side of underestimation. Some of the eye injuries were appalling, and many children will bear their scars for the rest of their lives.

The British Red Cross Clinic for Rheumatism has benefited to the amount of £1,113 14s. 5d. from the Red Cross Ball held at Grosvenor House on November 24, 1937.

Sir Samuel Brighouse, who is now aged 88, has just completed fifty-four years as coroner for South-West Lancashire, during which time he has held 25,000 inquests.

# Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS should be addressed to the Advertisement Manager. Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House, Tavistock Square, W.C.1.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin).

## QUERIES AND ANSWERS

### Hair Dye

"G.P." writes from Ceylon: Will some reader recommend a good and reliable dye for black hair which has gone prematurely grey in a patient aged 30 years, and where it can be obtained.

### Incapacitating Diarrhoea

"STUG" writes: I shall be interested to see the replies to "Emdee's" query (*Journal*, December 11, 1937, p. 1206), as I have been suffering from a similar condition for the past year. In my case, too, all the usual investigations, which have been undertaken in two nursing homes, have failed to indicate any specific cause. Indeed, "rectal ramming," whether undertaken for sigmoidoscopy, *x*-ray examination, or wash-outs, has always caused greatly increased and prolonged exacerbations of the diarrhoea. In an unsuccessful attempt to keep on in a good whole-time appointment, I have studied colitis to the point of obsession, and it seems to me that the actual cause of this condition is a localized dysfunction of the sympathetic nervous system, resulting in neuromuscular failure with consequent spasticity and atonia. In addition to a history of abdominal symptoms in childhood, perhaps there may also have been some perityphlitis, not necessarily appendicular in type, but possibly tuberculous in origin. Opium in one form or other seems to be the only effective drug, and I have found it best to apply the principle of "little and often" to the diet and to limit drinking to sipping between meals. Charcoal is sometimes useful, a tonic may be tried, and, of course, attention should be given to the balance between rest and exercise and the avoidance of exposure to cold. If a specific causal organism has been found the relevant vaccine may be tried, though even in cases in which none has been discovered anti-dysenteric serum may be effective. There is also bacteriophage therapy, which may be of use.

### The Squatting Position in Defaecation

"VIS MEDICATRIX" writes: Everyone who does not adopt the squatting position in defaecation is suffering from partial constipation. Our waste-paper baskets are daily filled with literature on how to cure constipation and avoid its sequelae. John Chiene, late professor of surgery in the University of Edinburgh, and known to thousands of Edinburgh men as "Honest John," gave us a very interesting lecture on his return from the South African campaign on the squatting position. He described how, by carefully weighing his faeces as passed in this position on the veld and as passed in the ordinary pedestal water closet, he found that in ordinary civilian life the rectum was never sufficiently evacuated. He claimed that the *vis a fronte* suction, or syphonage, moved on the contents of the transverse and ascending colon and prevented the formation of a caecal cesspool. The outstanding advantages of this are too obvious to require stressing. He invented a cataphysical water closet which rather alarmingly precipitated its user into the squatting posture. I think this, and its price of about £5, did not tend to popularize it. Some six or seven years ago I got an advertisement of a simple device that fitted round the base of the pedestal, with jointed foot-rests that folded back out of the way when not in use and could be brought forward into position when required. This cost 10s. 6d. I unfortunately lost this, and have been unable to trace it. Could anyone please advise me where these can be obtained? I feel convinced that if practitioners would adopt the squatting position and ascertain the benefit for themselves, and then instruct their patients accordingly, there would very possibly be much less appendicitis and other pelvic and abdominal troubles and a better level of general health. However small the benefit, it costs nothing, and I am not one of those who believe that because a thing costs nothing it is worth nothing. A further use of this position is during labour: the gains are obvious—for example, gravity acts directly, extra powers of expulsion from pressure of thighs on abdomen, shortening of the third stage, etc. In these days of ante-natal work it is easy to train patients.

*** We cannot trace the device mentioned by our correspondent; but J. A. Hornibrook in *The Culture of the Abdomen* describes and figures an appliance marketed by Messrs. Doulton and known as the "health closet," with a low seat higher in front than at the back.

### The Development of Obstetrics

Dr. JOHN LOGAN (Lincoln) writes: On lately reading Playfair's *Midwifery*, printed in 1886, I was impressed by the stress laid on the operations of craniotomy, cephalotripsy, etc., practised in cases of gross disproportion. From the numbers quoted such operations appear to have been far more frequent then than is the case to-day; no mention is made of trial labours. Are the pelves of the women of this century broader, and the musculature better developed, or is there less interference with Nature and better diagnosis? Caesarean section is described as a desperate last hope, only to be resorted to when even a mutilated foetus cannot be extracted. Commonly it was attempted from two to six days after the onset of labour, following the failure of attempted cephalotripsy, and with the patient moribund. Since transfusion at that time was commonly by the arm-to-arm method, irrespective of blood grouping, or perhaps after a preliminary defibrination of the donor's blood by whipping with a twig, and since even the injection of whole sheep's blood was undertaken, we can well realize the hopelessness of the Caesarean operation. I would like to hear an authoritative pronouncement, telling in detail the indications for these two distinct attacks upon the foetus *in utero*, and indicating whether the approach per vaginam is still used or whether it has been discarded mainly in favour of abdominal section. In my experience even the application of forceps (never by chance allowed me when putting in my number of cases as an intern in a lying-in hospital) is fast becoming a mysterious art, almost beyond my capabilities, to be attempted only when conservative treatment has failed. When *laissez-faire* has brought those obstinate cases of inertia of the uterus and bony disproportion to a standstill, a speedy removal to a maternity hospital or nursing home and the care of a specialist in the art disposes of the resulting embarrassing situation.

## LETTERS, NOTES, ETC.

### Angiospasm and Head Injuries

Dr. N. PINES (London, E.1), in connexion with the papers by Professor E. Mapother and Dr. J. P. Martin published in the *Journal* of November 27, 1937 (pp. 1055 and 1061), writes: In many cases of so-called traumatic neurosis a proper examination of the vascular system will reveal a state of angiospasm in different parts of the body, affecting sometimes the cerebral blood pressure, as measured by the method of Baillart: the method is difficult, but once mastered is invaluable and certain. It is a great pity that in this country the study of angiospasm is not pursued actively.

### The Cause of Acute Rheumatism

Dr. G. ARBOUR STEPHENS (Swansea) writes: Professor McNee is reported on p. 1089 of the *Journal* of November 27, 1937, to have said that none of the hypotheses of the cause of acute rheumatism—streptococci, allergy, or filterable virus—was at all convincing. May I be allowed to draw attention to the last medical report to the Colonial Office in the Falkland Islands, in which, it is stated, there is permanently damp October weather with little sunshine, the houses are damp, the soil acid, the food so poor that the school children wear dentures, and septic tonsils full of streptococci are very prevalent. Whilst all the conditions necessary for the streptococci to act are present, yet there are no cases of acute rheumatism. Does not this dispose of the streptococcal theory? My belief is that acute rheumatism occurs in children of the "acid class" (whose *p*H is increased), the determining factor being a protozoon carried by an insect such as harvest bug, midge, or flea. On the Islands it is obvious the children are of the "acid class," but there are no insects, no fleas, bugs, or midges to bite these children, and so no protozoal parasite is carried.

### The Care of the Hypodermic Syringe

No one will deny that the hypodermic syringe is one of the most important weapons in the doctor's armamentarium. Some may even think that its use is so thoroughly understood that it is a work of supererogation to discuss it. There are, however, a few points in its management which will bear emphasizing, even to a generation which is so familiar with its employment. It would be superfluous to labour the need for absolute asepsis, a lesson of the medical student's cradle. That this lesson has been thoroughly learnt is proved by the rarity of sepsis as a result of hypodermic medication. The next point is the advisability of causing the minimum of pain. Patients do not like being hurt, and here two considerations must be borne in mind. The needle must be the finest possible and irreproachably sharp. It is not very difficult to keep a needle sharp provided that care is taken not to boil it for long periods. Needles must be boiled, but they should only be immersed for a few seconds at a time. In these days it is more expensive to have needles resharpened than to buy new ones, which luckily are quite cheap, and if there is an extravagance which is pardonable on the part of a doctor it is in keeping himself well supplied with hypodermic needles of blameless acuity. Oily and viscous solutions, which are not readily drawn up into a narrow tube, often have to be injected through a needle of fine bore. But when such a solution is once introduced into the barrel of the syringe it can be forced out through a comparatively fine needle if sufficient finger pressure is supplied to the piston. For this reason it is often advisable for filling purposes to detach the needle, dip into the oily solution the glass nozzle, and draw the oil straight up into the barrel; after which the needle can be replaced and the desired dose administered through it. But care must be taken in doing this to hold the base of the needle with the finger and thumb firmly against the glass nozzle so that the firm pressure needed to force the oil through the narrow metal tube does not cause it to part company with the barrel, thus wasting the contents. From time to time one hears of cases where the needle breaks off and the distal portion becomes buried under the patient's skin. This accident, which has been known to lead to legal proceedings, is not really difficult to avoid. Fracture of the needle always takes place at its junction to the base. This is where corrosion is liable to set in, and is another argument for never using the same needle too long and too often; but in any case the danger of burying the needle in the patient can always be avoided by taking care not to plunge it in right up to the hilt. Provided this precaution is taken, even if the needle should break there will be a projecting portion which can easily be grasped and drawn out. As regards the care of the glass barrel of the hypodermic syringe, the chief risk to its integrity occurs during the frequent boilings to which it must be subjected. The risk becomes much increased in the case of large syringes such as are used more and more nowadays for intravenous injections. Heat-resisting glass has been introduced for this reason, but syringes constructed of this material are much more expensive than others, and the life of ordinary glass barrels is much prolonged if care be taken to keep them from resting on the bottom of the sterilizer. Everyone knows that the barrel should never be boiled with the piston *in situ*, and it is a good plan to support the barrel, and the piston also if made of glass, in the metal frame invariably supplied by the makers for holding them in their case. This ensures that the whole barrel is heated evenly and does not bump on the bottom of the sterilizer. It need hardly be said that the barrel of the syringe should be carefully cleaned every time it is used, but this is not always quite easy. Some of the solutions and emulsions for which it may be employed are liable to leave adherent deposits behind them. A great deal can be done with a pledget of cotton-wool grasped in a pair of fine forceps, but even this is not always adequate to remove the last traces of a mercurial or bismuth cream. In such cases an effectual cleansing may usually be obtained by passing either benzine or petrol through the syringe, afterwards removing all traces of it with methylated spirit.

### Infection from Fresh-water Molluscs

Dr. F. GORDON CAWSTON writes from Durban, South Africa: The occasional reports of human infestation with trematodes and the regretted death of a conchologist from carcinoma of the liver suggests that more use be made of the eosinophil count in persons who handle fresh-water molluscs, and are thus liable to attacks of free-swimming cercariae. Ignorant persons, and especially natives, should not be encouraged to handle these molluscan hosts, and, where an obscure disease of the liver occurs in a collector, early attention to the presence of infection may save a parasitic condition from becoming malignant.

### Osler in 1877-8

Dr. A. D. WEBSTER (Edinburgh) writes: The note on "Osler's First Appearance in Print" in the *Journal* of November 20, 1937 (p. 1026), prompts me to send the following reminiscence. Osler was professor of physiology in McGill University, Montreal. His habit was to invite the class to come at 8 p.m. to the General Hospital mortuary to follow up any particular case in his wards that had died. He was at that time particularly interested in pernicious anaemia, and of cases of these he examined every organ of every system. The very old basement room is fixed on my memory. He would work to the end and we would preserve the parts of the various tissues that he would examine later. How he toiled hour after hour—all of us nearly frozen; sometimes the hours went on beyond twelve before he would be satisfied. I see him now, his hands in the body and asking one of us to use his handkerchief for him, he hardly raising his head from his work. Such was dear Osler in those early days of his career.

### Convalescent Homes for the Poor

A short sixpenny history of the Metropolitan Convalescent Institution (14, Victoria Street, S.W.1) has been compiled by an anonymous authoress. The Institution was founded nearly a hundred years ago by Theodore Monro, a promising young St. Bartholomew's physician, who died at the age of 24. He was making his round at the hospital when he was touched by the distress of a woman who was about to be discharged to her slum dwelling, with no means of getting the country air which the doctors said was necessary to complete her recovery. Thereupon he summoned a meeting in Wigmore Street, and the movement was started for providing homes wherein convalescent care for members of the poorer classes might be afforded. To-day the Institution has well-equipped and pleasant homes at Walton-on-Thames, Bexhill, Broadstairs, and elsewhere, and since its foundation 400,000 men, women, and children have enjoyed the benefit of such provision. The story of this modest, unpretentious work was well worth recording.

### Disclaimer

Dr. MICHAEL ELYAN writes: The use of my name in the public press in connexion with a letter published in last week's *British Medical Journal* was without my consent.

### Corrigenda

A strange blunder crept into an annotation on Robin and John Adair on December 25 last. In speaking of General Wolfe we referred to his death "on the Plains of Abraham outside Montreal." As all the world should know, the Plains of Abraham lie close to the city of Quebec.

Our notice of Dr. John Rickman's *General Selection from the Works of Sigmund Freud* (January 15, p. 125) gave the name of the publishers incorrectly. The book is published by the Institute of Psycho-Analysis and the Hogarth Press.